VOL. LXXXIV PART ONE

JOURNAL OF THE ROYAL HORTICULTURAL SOCIETY

JANUARY 1959

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The month is named after Janus, who had two faces, one looking backward and the other forward. At this time we look back on much work carried out for distinguished members of the Institute of Landscape Architects such as the landscaping for the British site at the Brussels Exhibition and its maintenance throughout the duration of the show, the French garden at the Chelsea Flower Show, and many other contracts for private and industrial clients.

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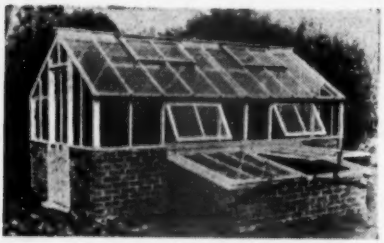

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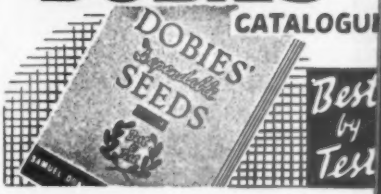

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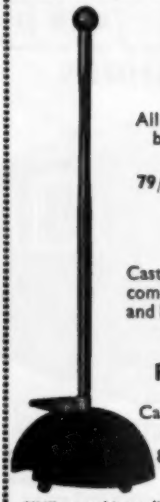

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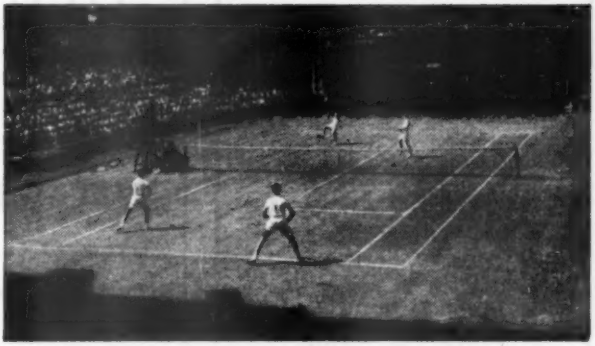

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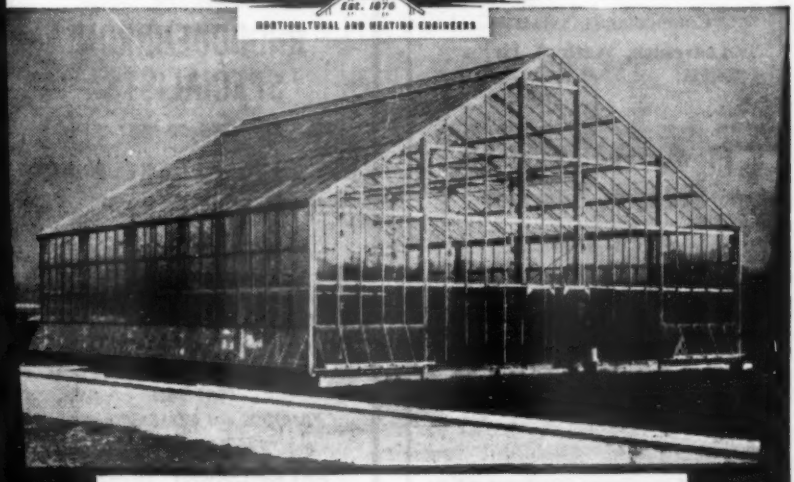

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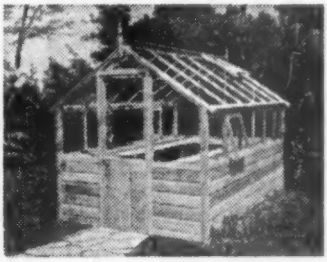

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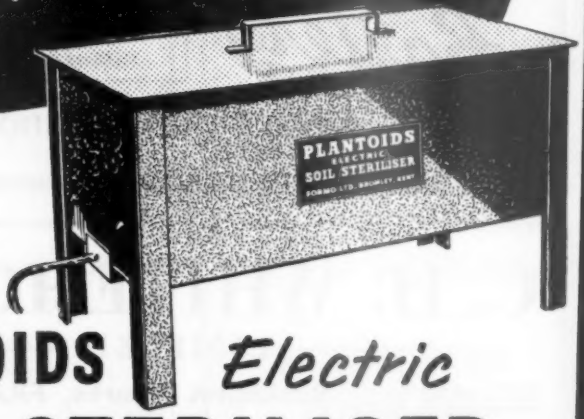

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JOURNAL OF THE ROYAL HORTICULTURAL SOCIETY

VOL. LXXXIV PART ONE

January 1959

THE SECRETARY'S PAGE

ANNOUNCEMENTS—JANUARY AND FEBRUARY

Shows

TUESDAY, January 27 12 NOON to 6 P.M. WEDNESDAY, January 28 10 A.M. to 5 P.M.	Fortnightly Flower Show, in the New Hall.
TUESDAY, February 10 12 NOON to 6 P.M. WEDNESDAY, February 11 10 A.M. to 5 P.M.	Fortnightly Flower Show, in the New Hall.
TUESDAY, February 24 12 NOON to 6 P.M. WEDNESDAY, February 25 10 A.M. to 5 P.M.	Fortnightly Flower Show, in the New Hall. Annual General Meeting at 3 P.M. on February 24, in the Old Hall.

Lectures

TUESDAY, January 27, at 3 P.M. "The Winter Garden", by MR. G. S. THOMAS.

TUESDAY, February 10, at 3 P.M. "The Royal Botanic Gardens, Kew—Past and Present", by DR. W. B. TURRILL, O.B.E., F.R.S., F.L.S., V.M.H.

Annual General Meeting—The Annual General Meeting to receive the Report of the Council for 1958 and a statement of accounts for that year will be held on Tuesday, February 24, 1959, at 3 P.M. The Meeting will be held in the Old Hall, as in 1958, in order that there may be ample room for all who wish to attend. It is hoped that as many Fellows as possible will be present.

Committee Meetings on January 13, 1959—If necessary the Fruit and Vegetable Committee and the Orchid Committee will meet on Tuesday, January 13, 1959, to consider novelties. Anyone wishing to submit a novelty to either of these Committees on January 13 must inform the Secretary on or before January 5, 1959, so that the necessary arrangements may be made.

Demonstration at Wisley—On February 25 there will be a demonstration at Wisley on the pruning of roses, commencing at 2 P.M. It will be repeated at the same time on February 26.

Lily Conference, 1959—A four-day Conference on Lilies, Fritillaries and Nomocharis will be held from Tuesday, July 7, to Friday, July 10, 1959. It is hoped that many Fellows and Associates will find it possible to attend and take part in the Discussions. Those who hope to attend on one or more days are asked to be good enough to notify the Secretary so that adequate arrangements may be made.

The Society's Examinations in 1959—Candidates wishing to enter for the Society's Examinations in Horticulture to be held in 1959 are reminded that the closing dates for the receipt of entry forms are as follows: General Examination in Horticulture—Monday, January 12, 1959; National Diploma in Horticulture, Intermediate and Final Examinations, and N.D.H. Honours—Monday, February 2, 1959; Teachers' Diploma in School Gardening, Intermediate and Final Examinations—Monday, February 2, 1959.

NOTES FROM WISLEY

(*Mycology Department*)

THE winter season, when the main display of flower in the Gardens is over, provides a good opportunity to remind Fellows of the work that is carried on by the indoor staff at Wisley. This, although not so conspicuous as the many beautiful trials of flowers, is nevertheless a very important part of the Society's activities. The work which goes on in the laboratory is extremely varied but a large part of it is concerned with the naming of flowers, fruits, etc., and with the identification of pests and diseases together with advice on their prevention or control. The intention of this note is to describe the kind of enquiry dealt with by the department concerned with plant diseases during the last twelve months.

In this sort of work the overall picture is that month by month the diseased specimens sent in are much the same for any year but there is a seasonal variation in the occurrence of different diseases, one type being more common in one season than in another. It is always interesting to note the regularity with which some diseases appear and how they develop according to the kind of weather they encounter. Moreover,

there is always the chance that a completely new disease will arise and immediately the question of its origin becomes a matter of importance. During the last twelve months the work has followed the usual pattern but there have been one or two interesting features.

In the spring the first disease to cause any large number of enquiries was the well-known Leaf Curl Disease of peaches, nectarines and flowering almonds, known as Peach Leaf Curl, *Taphrina deformans*, about which last spring there were more enquiries than for any other disease. Later we received several specimens of the closely related disease of cherries, also called Leaf Curl and caused by the fungus *Taphrina minor*, the control of which is substantially the same as that used against the peach trouble. We also received the usual enquiries about the control of Tulip Fire, *Botrytis tulipae*, despite the dry weather in April. In a wet spring it is important to check this disease by spraying with Zineb (zinc ethylene bis dithiocarbamate) and in our opinion this cannot be done too early. We advise that the first spray be put on when the plants are only about an inch high. Readers should understand that in infected soil this disease may attack the shoots before they reach the surface, but at Wisley in a recent experiment we found that certain fungicidal powders mixed into the top soil at planting time will prevent to a large extent this underground infection by "Fire".

Another disease very common last spring was Azalea Gall, or False Bloom, due to attack by the fungus parasite known as *Exobasidium vaccinii*, which is often seen on the small-leaved outdoor rhododendrons and may persist for a long time by appearing on azaleas flowering in pots in the greenhouse. These leaves, swollen up into galls and covered with a mealy white coating, are also seen, though rarely, on the larger kinds of azaleas, although in this case some people consider the causal fungus to be a different species. Grape Mildew disease, *Uncinula necator*, was fairly prevalent this season as it usually is in amateurs' greenhouses and if the weather in the early part of the season is wet, it is very difficult to control this trouble without supplying some heat by means of a lamp, at least during the worst periods of humidity. For these Powdery Mildew diseases the new spray substance dinitro (1-methyl heptyl)phenyl crotonate has proved extremely useful.

As the summer months go by, enquiries multiply and one of the most common is about Rose Black Spot, *Diplocarpon rosae*, which appeared rather late this summer. Apple Scab, *Venturia inaequalis*, was not as serious as we expected considering the wet weather and we have not received the usual number of enquiries on this trouble. The question of how to control lichens growing in turf has caused a large number of enquiries and so has the Lily Disease, *Botrytis elliptica*, both of them in our opinion having been much encouraged by the continual rain during the summer. Apple Mildew, *Podosphaera leucotricha*, seems to have been fairly common although the Powdery Mildew diseases in general were not more numerous than usual. The disease, which is somewhat unusual in apples and can always be associated with wet seasons,

is the one called Sooty Blotch, *Gloeodes pomigena*, and this has been very common this year. It only appears in quantity as a result of wet weather and possibly on fruits growing in shady places or amongst dense foliage, but the sooty black discoloration of the skin, although superficial, can often be most unsightly. Another disease which was more prevalent than we have known it to be for a quarter of a century was Dahlia Smut, *Entyloma dahliae*, easily recognized as small "haloed" spots on the lower leaves and rapidly spreading upwards. It may not require spray treatment on the larger varieties but the small bedding types are so susceptible that we consider they should be sprayed with Bordeaux Mixture or Colloidal Copper as soon as smut symptoms appear. It may seem strange that we have to report in such a wet season a smaller number of queries on Potato and Tomato Blight, *Phytophthora infestans*, but these diseases have been so abundant that we interpret this lack of correspondence about them as meaning that members are well acquainted with the symptoms and fully aware of the importance of spraying to prevent blight, at any rate in the case of outdoor tomatoes. On heavy soils there has been such a tendency to waterlogging, or at least very wet conditions, that a large number of plants have suffered from root rots, some of which could not be ascribed to any particular disease infection.

There are two diseases about which we get regular enquiries every year, and which we would like to mention specifically. They are Club Root of brassicas, *Plasmodiophora brassicae*, and the Honey Fungus, *Armillaria mellea*. The first named is so widespread that we have no doubt that it is the subject of enquiry at any institution which carries out advisory work on plant disease and, in general, gardeners are well versed in methods for checking it. On the other hand, it is surprising that such a common underground parasite as the Honey Fungus can often cause extensive damage to hedges or among trees and shrubs before the average gardener considers it necessary to seek advice. Whenever a tree or shrub dies for no apparent reason, and especially if more than one succumbs, an inspection of the root and lower parts of the plant ought to be carried out by an expert.

ASSISTANCE IN OBTAINING PLANTS RARE IN CULTIVATION

SOME Fellows have complained of the difficulty they have experienced in obtaining certain plants, rare in cultivation, which they desire to grow. In many cases these are plants which have been introduced to cultivation during the present century but are no longer generally stocked by the nursery trade. In order to assist these Fellows in their search, the Society offers to publish in the JOURNAL from time to time a list of names and addresses of Fellows, together with the name of the

plant they wish to obtain, so that any member of the trade or amateur who has the plant in cultivation, and is willing to make it available to the Fellow who is seeking it, may get in direct touch with him.

Will any Fellows who wish to take advantage of this service please send their name and address, together with the name of the plant they are seeking, on a postcard addressed to The Editor, *R.H.S. Journal*, Vincent Square, S.W.1.

WILL ANY FELLOW WHO IS WILLING TO OFFER ONE OF THESE PLANTS PLEASE COMMUNICATE DIRECT WITH THE FELLOW WHO IS SEEKING IT AND *not* WITH THE EDITOR.

DAY LILIES

H. J. Randall, C.B.E.

(*Lecture given on July* 15, 1958, MR. G. W. LEAK, V.M.H., *in the Chair*)

DAY lilies are herbaceous perennials and form a genus of the lily family. Their botanical name is *Hemerocallis*, which is derived from two Greek words meaning beautiful for a day, and this indicates their chief characteristic. Each flower lasts only for a day and then withers to give place to the next opening bud. Thus a plant will give a succession of flowers over a period of some weeks, the season ranging in Britain from about the middle of June to the end of August according to the locality in which the plants are grown.

Twenty or more species have been found in central and northern Asia, which is the natural home of day lilies. Most of them have been brought to this country within the past hundred years, but *H. flava* and *H. fulva* were known in Europe four hundred years ago, and *H. minor* two hundred years ago. It would be interesting to know how these importations took place. Were there plant hunters in those far-off days? Did Crusaders or sailors or early missionaries combine botany with their other interests? Whatever the answers to these questions the fact remains that these sturdy plants became acclimatized to Europe and were widely grown.

Although seeds from insect-pollinated or perhaps from hand-pollinated flowers no doubt germinated from time to time, there was not, as far as I can gather, any attempt at systematic, long-term hybridization until nearly eighty years ago. Then it was that two Englishmen, one of them quite young, began serious and independent efforts to improve the day lilies then known to them. I never met the older of these two enthusiasts, GEORGE YELD, but I have seen some of his introductions, one of which, 'Apricot', is still being grown. Compared with the gaily coloured giants of today these YELD seedlings might cause us to smile, but when we compare them with the original species from which they descended we realize the progress made by their raiser.

The younger of the two men, AMOS PERRY, was a friend of mine during the latter part of his life and he often spoke and wrote of his hybridizing efforts. Whilst still a boy he saw, growing in a stream near his home, *H. fulva* var. *kwanso flore plena* which he then thought was the most wonderful flower he had ever seen. This old plant still blooms profusely at Wisley and in many other places, and I do not know of a stronger-growing double hemerocallis. It certainly fired the imagination of the youthful PERRY, who, in spite of his subsequent adventures amongst irises, water plants and many other flowers, maintained an active hybridizing interest in the day lily until the end of his long life.

For many years PERRY was the only hybridizer of these flowers in Britain, and probably the world; and it is to his credit that he did not yield to the temptation to name and introduce a host of seedlings merely because they showed some slight improvement on their parents. He worked steadily for twenty years before naming his first seedling, and this was bred from *H. citrina* × *H. flava* and named 'Amos Perry' in honour of his father. When *H. fulva* var. *cypriana* became available to him he recognized its potential value, and by using it he raised the reddish-yellow variety 'Margaret Perry', which is still grown, forty years later, on both sides of the Atlantic. PERRY exhibited his favourites at the fortnightly shows of the R.H.S. and he had a way, which I have not seen copied, of showing a range of individual flowers in small containers rather than long flowering stems in vases. In this way he partially overcame the difficulty confronting people who, at two-day shows, exhibit flowers which last for one day only. AMOS PERRY'S name will, certainly in this country, always be associated with the day lily, and his work deserves an even wider recognition.

Before dealing further with the extraordinary progress which hybridizers have made in recent years I should perhaps briefly deal with the plant and its cultivation. The long and narrow leaves grow quite gracefully making the hemerocallis worth growing during the summer for its foliage alone. The roots are fleshy and take such a hold on the soil that it is possible to move plants from one part of the garden to another even when they are in full flower. (A good watering should, however, accompany this drastic treatment in hot, dry weather.) Each flower has three petals, three sepals (which are narrower than the petals), one pistil, six stamens and a seed pod. Each flowering scape (or stem) has, in most modern introductions, from twenty-five to over fifty buds.

Quite apart from the raising of new plants from seed—and it must be realized that seedlings differ from and are frequently inferior to their parents—there are three ways of increasing the stock of plants. First, and the most generally adopted, by splitting a root into smaller pieces which increase in size when replanted. Secondly, by taking rooted suckers from those plants which send out suckers. Thirdly, by cutting off and then rooting proliferations which sometimes, with some varieties, appear on the flower scapes.

Most day lilies are diploids, but tetraploids are nowadays being

created by what we might term artificial methods. For example, in the U.S.A., DR. ROBERT GRIESBACH, a scientist, and MR. ORVILLE FAY, an experienced hybridizer of irises and day lilies, have been working on the following lines. Seeds are placed in petri dishes, about one hundred seeds to a dish of standard size, and are kept moistened in a refrigerator at about 34° F. for from one to three months. The dishes are then placed in a higher temperature (64° F. or thereabouts) when the seeds germinate rapidly. When the seedlings are from three to five days old they are immersed in a 0·05 per cent colchicine solution for from twelve to fourteen hours and are then washed for several hours and planted in frames. This treatment is obviously a shock to the seedlings because about 75 per cent die from colchicine poisoning and the remainder are slow to get established; but when the surviving seedlings are two or three months old they are ready for planting out in the open.

Not all the seedlings so treated give the required results, but last year, out of 900 treated seedlings, 100 developed polyploidal characteristics, and these plants have, or are likely to have, large and thick leaves with large flowers of exceptionally good substance. It is expected that tetraploid day lilies will, apart from better growth, have more varied and intense colours, and it may be that quite new colours will be achieved. The prospects are attractive to all who are interested in hybridizing or in the general cultivation of hemerocallis. Within a few years we might see startling changes and improvements in this genus which for centuries consisted of small-flowered species in the wilds of Asia.

In these days most gardeners are looking for plants which create the smallest amount of work and which, when once planted, can be left undisturbed for a long time. That is why shrubs are so popular. Amongst herbaceous plants the day lily has obvious claims for consideration. If planted in good soil, or, when the soil is poor, if given at planting time a foundation of old compost or manure, it will flower regularly for years. The flower stems do not need staking, the spreading leaves keep down the weeds, the plants seem to be disease-proof and they will survive with practically no attention. For people who take a pride in their gardens, however, there are three tasks which should be undertaken to secure the best results: (1) each spring a top dressing of fertilizer or a mulch of manure should be spread round the plants; (2) in hot, dry weather an occasional watering should be given; and (3) during winter or early spring any dead leaves should be removed as they tend to harbour slugs and create an untidy appearance.

Day lilies are not exacting in their requirements. They will grow in almost any type of soil, in full sun or partial shade, and in all parts of the country. In the U.S.A., where there are extremes of heat and cold far greater than our own, the plants are grown in every State; but it must be admitted that some varieties do better in certain districts than in others. The plants can be grown on their own, in ordinary herbaceous borders, in the front of shrubberies, or with one or more other types of plant. In my own garden I have adopted all four methods, but I specially

like the one followed in some American gardens where daffodils, tall bearded irises and hemerocallis are planted in the same beds. In this way, with only short intervals, a succession of aristocratic flowers can be obtained from March to August, and by that time many of us need a rest in preparation for the rigours of the next gardening year. Another large bed in my garden is confined to daffodils and hemerocallis, a plan which allows both to flower without disturbance or counter-attraction, and which makes for garden tidiness.

About 1920 two newly found species arrived from China—*H. multiflora*, which had better branching and more flowers per stem than any species previously known, and *H. fulva* var. *rosea*, which had a rose-pink colouring unlike that of any other member of the family. These wonderful finds gave fresh impetus to AMOS PERRY and also to American hybridizers who were beginning to turn their attention to this attractive genus. From then onwards, with only a temporary check during the years 1940–5, the raising of new varieties proceeded at an increasing pace. Whereas PERRY contented himself with the raising of about six hundred new seedlings each year, scores of gardeners in America each raised annually from one thousand upwards. More and more seedlings were named and registered until recently five hundred or more new names have been registered each year. Indeed, the difficulty nowadays is not so much the raising of good seedlings as the finding of suitable names for them.

I have never raised more than several hundred seedlings in one year, and even that number taxes my time and ability to make the necessary daily inspections of the seedlings. I therefore admire the courage and concentration of American growers who tackle ten times as many. I am, however, confused when I read or see descriptions of over five hundred new seedlings named and registered each year. Very many of these seedlings are almost exactly alike and are inferior, or certainly not superior, to others already in commerce. This same form of insanity, admittedly quite harmless, affects the hybridizers of daffodils, irises and, for all I know, other flowers as well. We all love to give swan-worthy names to our little geese, and I sometimes wish that there existed greater discrimination and restraint amongst hybridizers generally.

This word of criticism does not, however, lessen the importance of the work which hybridizers of hemerocallis have done during the past forty years. They have, from small-flowered species with a very limited colour range, produced a race of plants with large and brightly coloured flowers which have great variety and garden value. And whereas the petals of the older flowers were generally narrow and "tailored", those of the newer varieties are often wide and delightfully ruffled. The progress made has been phenomenal. In the past, yellow was the dominant colour amongst day lilies, but colours now range from pale primrose to deep orange, from light cherry-red to deep crimson, from pale pink to deep salmon; and there are bicolors and blends in wide variety.

Until some kind of popularity poll is taken it will be difficult to say which colours are the most favoured in this country. Judging by the reaction of visitors in my own garden there are two groups amongst the "yellows" which have a special appeal—the soft primrose flowers with green shading in the centre and the bright orange ones which seem to become more intensely coloured in the evening light. But there are other shades of yellow which are very attractive, and to this attractiveness can be added such virtues as beauty of form, strength of substance, a pleasant scent and a ruffling or waviness along the edges of the petals. The foundation of any good collection of day lilies must be a range of these "oranges and lemons".

Within the past few years the redness of day lilies has become brighter amongst the new seedlings. We have not yet reached the brilliance of a scarlet geranium, and I am not sure that we need it; but we have certainly raised beautiful flowers with a redness which pleasantly stands out in the garden border. Some hybridizers have introduced a touch of purple into their reds, and the word "black" has been used in the names given to some of the darker seedlings; but we are nowhere near a pure black day lily, and in my view many of the dark ones are merely dirty with no garden value. The new reds, when they are more freely available, will be immensely popular.

Perhaps the most striking advance of recent years has been amongst the pink hemerocallis. The smallish flowers of *H. fulva* var. *rosea* with their indeterminate colouring have given place to a whole series of larger flowers from pale apricot to deep salmon. It is remarkable, by the way, how, in order to describe the colouring of flowers, we so often use the names of fish and fruit as adjectives. We now look forward to the time when we shall have day lilies as white as a cod or as green as a greengage.

There are fascinating flowers coloured brown and tan. Others have a halo or band around the interior of the flower. Some have red petals and yellow sepals, and other combinations can be obtained. A few varieties have long, narrow petals and sepals, and these are given the undignified name of "spiders". And although a good large flower will always be preferred to an indifferent small one, there are several day lilies with very small flowers which are exquisite. One of these, named 'Golden Chimes', received more admiration in my garden this year than any other.

Hybridizers have many avenues along which they can work, and I have little doubt that over the next decade a further considerable advance will be made. White day lilies will probably appear in time together with pure lavender ones. There are several already in commerce which have the word "lavender" in their names, but I expect them to be orchid-pink rather than lavender in colour. The raising of a pure blue seedling is something which I dare not yet predict, but there will be other new shades introduced for the benefit of our gardens, and it is possible that flowers lasting two days instead of one will soon be

procurable. In the U.S.A. there are some plants which are said to have this characteristic; but to me they are damned in advance by being called "tu-day lilies".

In a talk which will be published and widely circulated, particularly in this country, one has to be careful in recommending varieties to that friendly person, the average gardener. If he, or she, finds that the recommended plant is quite unprocurable, his or her friendliness tends to become tarnished. In my garden I may happen to have a very desirable seedling, but it is useless for me to recommend that seedling if only one root exists in Britain. Fortunately day lilies increase at a satisfactory rate, and there are several progressive nurseries which deal in the newer and better plants rather than in those which were popular thirty years ago. The following can be recommended as excellent for general garden use and as being available in modest quantities at certain nurseries.

Yellow and Golds. 'Carved Ivory', very pale primrose; 'Doubloon', bright yellow, narrow petals; 'Glowing Gold', brilliant orange (Fig. 5); 'Golden West', yellow; 'Kindly Light', a yellow "spider"; 'North Star', pale yellow, greenish centre; 'Vespers', strong-growing pale yellow.

Reds. 'Ambassador', currant red; 'Display', bright red; 'Garnet Robe', garnet red with green throat; 'Red Torch', cardinal red with green-gold centre; 'The Doctor', vermilion.

Pinks. 'Evelyn Claar', orchid pink; 'Pink Damask', deep salmon; 'Pink Prelude', flesh pink with yellow centre; 'Salmon Sheen', pale salmon.

Blends, etc. 'Colonial Dame', buff-apricot; 'Norma Borland', copper brown; 'Painted Lady', cinnamon brown and yellow; 'Prima Donna', buff-peach.

I have limited my list to twenty names. Other people would, of course, choose a different set, and I realize that my own preferences change from year to year; but any person with some of the above flowers should add to his gardening stature and pleasure.

The Council of The R.H.S. have encouraged a wider interest in day lilies by arranging for a trial at Wisley and by inviting growers to exhibit at the fortnightly shows at which these flowers lend themselves to effective display. The real test for all plants, however, is their behaviour under ordinary garden conditions. At Wisley, quite apart from the formal trial, many clumps of hemerocallis are grown in the front of shrubberies, and even though the varieties thus planted might be regarded as museum pieces they give a splendid mass effect. When modern introductions can be extensively grown at Wisley the larger flowers with their brighter and more varied colours will be an added attraction to those famous gardens. The newer day lilies are beginning to find their way to Kew, the Savill Gardens at Windsor and other centres of horticultural interest. I feel confident that when the general public see them well grown they will take the keen interest in the genus which AMOS PERRY always desired but did not live to see.

CLEMATIS

G. R. Jackman

(*Lecture given on July* 29, 1958; THE HON. LEWIS PALMER, F.L.S., V.M.H., *in the Chair*)

IT would be wasting your time for me to describe such well-known clematis as 'Nelly Moser', 'Jackmanii' and *montana*, beautiful and worthy though they are. There is also a danger of a few that are popular becoming so hackneyed that others of really outstanding merit are left out of our gardens. I want to remedy this by recommending some lesser-known clematis that will give joy and satisfaction when fully established, and then follow with cultural hints.

In recommending these clematis I cannot do better than deal with them in more or less chronological order, by the time of their flowering. *C. calycina* starts the season in January or February. Its rather fern-like evergreen leaves set off well the small, cream, chalice-shaped flowers which are heavily spotted on the inside of the cup. It is not completely hardy and therefore needs a sheltered wall.

There is now a gap of two to three months before the next clematis come into flower when, in about the last week of April both *C. alpina* and *C. macropetala* and their varieties begin to bloom.

Here I should like to stress a point on which I am very keen—the importance of good forms. Most species from seed are very variable, and *macropetala* is one of those that varies greatly, which means that a first-class clone must be selected and kept true, by all plants being raised from cuttings. There is a lovely variety, 'Maidwell Hall', whose flowers are intermediate between Oxford and Cambridge blue and there is also the soft shaded 'Markham's Pink'.

The nearly related *alpina* has a particularly good form in 'Columbine'. Here the single flowers are bell-shaped and with four sepals of a lovely soft lavender.

There is also a good pure white single, viz. *alpina sibirica*, while the double flowers of *alpina sibirica* 'White Moth' are identical with *macropetala* except for their colour. Both *alpina* and *macropetala* and all their forms are vigorous and trouble-free and flower with abandon.

Following the *alpina* and *macropetala* groups in order of blooming come *C. montana* and its varieties and allied species. Here again the question of good forms arises. *C. montana* itself from seed can be very disappointing, as some seedlings have meagre flowers which are poor in colour. *C. montana grandiflora*, however, gives large, pure white shapely blooms, and from a garden point of view there is little to choose between this and *C. spooneri*, although the latter is rather later.

I understand that the pink-flowered *montana*, the variety *rubens*, is a geographical form, and is found over great areas of Western China to the exclusion of the white-flowered type from the Himalayas. Here again a good coloured form should be grown. I can also strongly recommend *C. montana* 'Elizabeth', whose sweetly scented flowers are large and a medium pink. For freedom of bloom there is nothing to choose between one or the other.

C. chrysocoma, which also belongs to this group, has not yet found the popularity it deserves. It produces clusters of pink flowers on extra long stalks, and not only has a main flush towards the end of May but flowers a second time, during the summer (Fig. 2).

Following closely after the *montana* varieties comes the first group of large-flowered hybrids, those derived from *patens*, which bloom on the end of short growths, produced from the previous year's shoots.

The well-known 'Nelly Moser' is a typical variety (Fig. 4), and others related to it are 'Barbara Dibley', 'Barbara Jackman' and 'Sealand Gem'. 'Barbara Dibley' is 'Nelly Moser' in a much deeper version, while the basic colour of 'Barbara Jackman' is soft petunia, and the plum-coloured bar down the centre of each sepal is very distinct, while a further contrast is provided by its boss of cream stamens. 'Sealand Gem' is a mauve without the pink tints of 'Nelly Moser' and has a petunia bar. A tip on the correct placing of all these varieties is that in full sun their flowers soon fade and they should therefore be given an open north aspect.

'Lasurstern' with its extra-sized deep violet flowers and yellow stamens is a superb variety, but usually only blooms once. 'The President' on the other hand, gives a full flush at the end of May, followed by a further one during the summer. It has an added quality, since its deep violet colour is retained in strong sunlight. The sepals are broad, but run to a point and it has deep brown stamens.

'Beauty of Richmond' is a slight improvement on the old, but aristocratically beautiful 'Lady Caroline Neville'. The flowers are lovely in shape, the sepals being long and with flowing curves. They are mauve, and the bar down the centre of each is the same colour but deeper.

For anyone who wants a clematis that is " different" I can recommend 'Proteus'. The pink flowers suffused with plum purple are of a colour not found in any other variety. The first blooms, which open at the end of May, are double, and when it flowers again late in the summer all the second crop is single. This variety is in bloom at the same time as those of the *patens* hybrids, but like so many other hybrid clematis which are of mixed parentage it is almost impossible to be strictly correct when assigning it to a particular group. We talk of a clematis being a *patens*, a *lanuginosa*, a 'Jackmanii' or a *viticella* hybrid. What we usually mean is that it approximates to the particular parent in its period of blooming, the shape of its flower and other factors.

With this in mind we now come to the summer-flowering hybrids.

Some of these, if left unpruned, or only slightly pruned, overlap the flowering period of the *patens* group. Such a one is 'Elsa Spath', a bright lavender-blue with contrasting dark stamens. It blooms very freely and is a vigorous grower. 'Henryi', too, under similar conditions will flower in June. It is a superb white variety of large size, with slender sepals that are shapely and pointed. Being white, its boss of dark stamens are in striking contrast.

In my opinion clematis 'Ernest Markham', is the best of the reds, although 'Ville de Lyon' with its sepals much deeper in colour at the rim than the centre will always be grown. It is too good and distinct to be dropped. The petunia-red flowers of 'Ernest Markham' are of medium size and have a velvety sheen. It grows very strongly, and such is its vigour that occasionally young plants cause anxiety through failing to bloom. This can be remedied by pinching the tips of the vigorous shoots when in full growth. This causes them to branch, and the check induces flower buds on the resultant young branches. Normally it is most satisfactory as a free-flowering plant.

When on holiday in Paris in 1950 I visited the Rose Garden at Bagatelle and there, covering a high wall was a superb plant of clematis 'Étoile Violette' producing literally thousands of blooms, and although not individually large, roughly 3 inches across, the massed effect of their deep violet flowers with yellow stamens in contrast was stupendous. It is an old Continental variety and for some inexplicable reason has been unknown in British gardens, although it is mentioned in MARKHAM's book on clematis. As you may imagine, I strongly commend it, for we have given it a test and it has proved both vigorous and prodigal, and continues in bloom over a very long period.

'Huldine' is another clematis of merit for vigour and beauty. The upper surface of the translucent sepals are pearly white, with a distinct mauve pink bar on the underside. Owing to this translucent quality the flowers are particularly beautiful when viewed from below with the sun shining through them.

Where a deep purple clematis is needed I can strongly recommend 'Gipsy Queen' with its richly coloured velvety sepals. It seldom opens before the last week of July and its beauty continues well into August. By that time the large-flowered clematis season is nearly over and it is here that a late variety such as 'Lady Betty Balfour' is so valuable. This does not start to flower until September and often continues in beauty into the following month. Its large and shapely blooms with violet-blue sepals and bright yellow stamens give a vivid effect.

Before speaking of cultural matters I should like to recommend a few of the small-flowered species and varieties that bloom in the summer.

It is surprising how seldom one sees *C. flammula*, with its masses of deliciously scented, dainty white flowers (Fig. 3).

C. jouiniana, too, is a comparative rarity, yet where grown over an old tree it is very beautiful. Its dainty cross-shaped lavender flowers are profuse at the end of the summer.

C. tangutica 'Gravetye' is better known. It is a rampant grower, and its yellow "Chinese Lanterns" are followed by silken, soft gold seed heads.

Reverting to the subject of good forms, *C. viticella* from seed is variable, and its small cup-shaped purple-blue flowers can differ in size and colour. A selected clone raised from cuttings can be a charming addition to the summer garden and there are also several named varieties giving quite a wide range of colour; the white-flowered 'Alba Luxurians' and the red *kermesina*; 'Little Nell', a soft slaty mauve, and 'Royal Velours', a deep velvety purple; and, finally, 'Minuet' whose dainty, cream-centred flowers have a broad band of purple spanning the end of each sepal. All of these are charming and trouble-free, vigorous in growth and with a profusion of flower.

Turning to cultural matters, although clematis will succeed on limestone and chalk, calcareous soil is not essential; in fact, on the thin soils over chalk in the Salisbury district, I am told by an experienced gardener that the large-flowered varieties are not easily established. I have found, on the other hand, that where clay is carefully prepared clematis do admirably and the finest collections I know are growing on this type of soil. If planting on clay, it is most important that the soil should be well broken up and mixed with plenty of leaf mould and free-draining loam.

A worth-while tip is that there is no better conditioner of clay than furnace ashes which have been thoroughly weathered. They should be worked in during the spring, after the soil has been turned up rough for the winter. If conditions are right in early autumn, planting may be done at that time, mixing in the ashes already mentioned, but in general, spring planting is better.

On medium loams and light sandy soils planting can be done with safety right from the end of September to the end of April, and here again good preparation and feeding pays dividends. If it can be obtained, there is still nothing better than farmyard manure, but failing this hop-manure is excellent and the initial dressing should be augmented annually by bone meal and hoof and horn in the spring. A useful tip (and this also applies to established shrubs and trees) is to make holes with a crowbar about 6 inches deep round the plant, in a circle, or several concentric circles, and pour the fertilizer into these, afterwards closing them up.

With regard to aspect, if clematis are planted in a hot and sunny position their roots must be shaded. A low shrub like lavender, or a perennial such as nepeta, will give what is needed. Alternatively, a paving stone placed flat in the ground in front of the plant keeps the roots cool. Providing they are not overhung with trees, clematis flower and grow well on a north-facing aspect.

The method of pruning depends on the type. Large-flowered clematis of the *patens* group, that are in flower before the beginning of June, need carefully training to prevent a tangle of branches, and any

pruning should wait until their blooming is over. The flowers are produced at the end of short side shoots that spring from the growths of the previous season, and these are cut back to a joint near their base, while to keep the plant furnished one or more of the main shoots may also be drastically pruned to encourage fresh branches low down on the plant.

The *patens* varieties of clematis are followed by the *lanuginosa*, 'Jackmanii' and *viticella*. These bloom in the summer on short side growths from the fresh shoots of the year. All these varieties may be drastically pruned as soon as the buds swell, usually in February, and this also applies to the small-flowered species and hybrids. They can be cut back right to the base of the branches made in the previous summer. This will prevent plants from becoming leggy. Sometimes circumstances may ordain a less drastic treatment. This is particularly the case with *lanuginosa* varieties, for many of them will flower to coincide with the *patens* if lightly pruned, and where it does not matter if the base is unfurnished.

The small-flowered clematis that bloom in the spring—the *montana*, *alpina* and *macropetala*—should have any unwanted growths cut back when blooming is over, but as they are often used to ramble naturally this is usually unnecessary.

Before leaving the subject of pruning there are two further points. The first one is the initial treatment after planting. Plants of all varieties should be cut back to above a joint about 6 inches from the ground, the work to be carried out in early spring. The second point is the method of "pinching", already mentioned, which keeps a plant furnished during the period of growth. It consists in removing the tips of vigorous shoots to induce them to fork and it is a particularly valuable method where plants are rampant at the expense of flower. The process may be continued until the middle of June. If continued later the flower crop will suffer.

So far as pests are concerned clematis are singularly free, but they are attacked by two diseases. Mildew can be controlled by Karathane, but so far there is no known cure for Wilt which causes the sudden collapse of young plants of the large-flowered hybrids up to their third or fourth year. In spite of this trouble, they are so supremely beautiful they are worthy of every effort to grow them, even though there is a proportion of loss.

To prevent future confusion I now wish to read you a statement on re-naming two varieties of clematis mentioned in this lecture. It is as follows:

Clematis macropetala 'Maidwell Hall'

In 1956 we started the distribution of a *C. macropetala* form under the name of *C. macropetala* 'Lagoon' and it is described in our Catalogue as "intermediate in colour between Oxford and Cambridge blue". We now find that an identical mutation was

discovered twenty years ago by MR. OLIVER WYATT, of Maidwell Hall, Northampton. In future, therefore, this particular form will be called *C. macropetala* 'Maidwell Hall'. The name 'Lagoon' will be transferred to another form with flowers of a deeper colour.

POLYTHENE FILM IN HORTICULTURE

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PLASTIC materials, although of comparatively recent invention, have not only become widely used in the home and in industry but are playing an increasingly important part in horticulture. Of the many types of plastic available, polythene has properties which make it invaluable for many horticultural techniques. Readers of the gardening press will have noticed a regular advertisement which describes polythene as "the wonder material with 101 uses". In this article it is proposed to examine only two applications—the use of thin polythene film as an internal heat-retaining lining for glasshouses and the use of a rather thicker film as an alternative to glass for greenhouses.

Polythene is made by subjecting a gas—ethylene (which is derived from crude oil)—to very high pressures. "Poly" comes from a Greek word meaning "many" and the word polythene is an abbreviation of poly ethylene—the name, incidentally, by which the material is known in the U.S.A.

Polythene was discovered by I.C.I. scientists in 1933 and was first made as sheet film in 1938, again by British scientists; it is this material which is most useful in horticulture. Sheet films of thicknesses of less than one thousandth of an inch can be made, although films of slightly greater thickness are generally used. For example, the sheeting most often used for lining glasshouses is one and a half thousandths of an inch thick—about the thickness of a human hair.

As sheet film, polythene has properties which, in some respects makes it similar to the outer skin of plants since although it is waterproof, it transmits light and also allows the passage of oxygen and carbon dioxide. It is this latter characteristic which makes it valuable for the packaging and storing of plant material and for some propagation techniques of which "air-layering" is an excellent example.

The amount of light which passes through polythene film is of great importance to the horticulturist when the material is to be used to protect green crops. Over 90 per cent of the visible spectrum (the part mainly used in photosynthesis) passes through polythene film and it also allows the passage of more infra-red and ultra-violet light than glass.

Unfortunately, ultra-violet radiation slowly weakens polythene film and this limits the length of time for which it can be used outside.

Polythene film for lining glasshouses

The advantages of double-glazing glasshouses in order to reduce heat loss have been appreciated for a long time, but the expense involved has prevented general application of the principle. The fairly recent development of inexpensive plastic films with high light transmission properties offers glasshouse owners a method of obtaining economically the benefits of double-glazing.

Still air is a very poor conductor of heat and materials such as cork, glass wool, foam concrete, etc., derive their heat-insulating properties from the amount of trapped air they contain. When a sheet of plastic film is fixed to the underside of glasshouse glazing bars a layer of air is trapped between plastic and glass and work at the National Institute of Agricultural Engineering (1) indicates that a house completely lined with polythene film is almost as efficient at reducing heat loss as one double-glazed with glass.

The use of transparent films to line glasshouses probably originated in Scandinavia, certainly plastic film was used for this purpose in Denmark in 1953. Trial work with polythene film was started in Britain in the severe winter of 1954–5; results were so promising that supplies were made available to both commercial and amateur growers the following winter and some degree of polythene lining is rapidly becoming an established practice when heated crops are grown in glasshouses.

Fitting plastic linings in glasshouses

Plastic films can be fitted to the undersides of glasshouse glazing bars with drawing pins, although commercial growers usually use a stapling device which clips the polythene to the bar. As there is no adhesive which will give a permanent bond between polythene and any other material, the lining of metal houses involves either the erection of a light internal timber framework to which the film can be fastened, or the draping of the plastic over wires stretched along the length of the house. If obstructions fastened to the glazing bars prevent internal lining, some degree of heat insulation can be achieved by fixing the film outside the house.

Moisture condensation on plastic film linings

In a lined house with the ventilators closed, moisture condenses rapidly on the lower side of the plastic. The polythene must therefore be applied tautly with a smooth even fall from ridge to eave, or this moisture can drip on to the plants below. A roof of low pitch will increase the likelihood of drip occurring.

The moisture on the plastic is formed when the warm air circulating within the lined house comes into contact with the lining (which is

cooled by the air trapped between the film and the glass). The warm air is cooled at the point of contact and cannot hold so much moisture which is released to condense on the plastic. By the same process a mist forms on a cold window when one breathes on it; similarly moisture condenses on the glass of a greenhouse but as it forms a continuous film of the uniform thickness it is less noticeable. Because of the unusual surface properties of polythene condensed moisture stays in the form of individual droplets which grow until they are large and heavy enough to run down the film. The amount of moisture formed depends on the difference in temperature between the air inside the glasshouse and the air in the insulating gap—no moisture will be deposited on plastic when the air on each side of it is at the same temperature.

Loss of light as a result of lining

Investigations of the National Institute of Agricultural Engineering (1) suggest that light loss caused by a polythene lining varies between 5 and 14 per cent, according to the intensity of radiation. There is no reliable evidence to show that the condensed moisture on the plastic is responsible for any loss of light.

Because of electrical properties of polythene, dust particles are attracted to the surfaces of the film. In industrial areas such attracted dirt can appreciably reduce light transmission and this point should be considered if the plastic is to be used for a second season on light-sensitive crops.

The amount of light available to the plants in a lined house is of vital importance, especially as the value of the plastic as a means of saving fuel is greatest in the coldest months of the year when light, as well as temperature, limits plant growth.

Plant climate in a lined house

Lining a glasshouse with polythene film changes the environmental conditions inside the house by reducing the amount of cold (and therefore relatively dry) air entering the house, thereby increasing temperature and humidity. Most plants seem to enjoy the new climate but high humidities can increase the incidence of some fungus diseases such as Tomato Leaf Mould (*Cladosporium fulvum*) and Grey Mould (*Botrytis cinerea*). More ventilation than that previously given is likely to be required in a lined house, except in very cold weather and, as a general rule, ventilators at the apex of the house should not be sealed.

Cultivation of plants in lined houses

For optimum plant growth numerous factors such as temperature, light and the availability of water and nutrients must be properly balanced to give a suitable environment. For example, growth is not improved and may be harmed if one factor, such as temperature, is increased and another, such as light intensity, is reduced. The skill of

the grower lies in his ability to provide the best conditions for the kind of growth he requires by adjusting the factors over which he has direct control.

In winter and early spring the two most important factors limiting plant growth are temperature and light. A polythene lining will give considerable increases in temperature but will also slightly reduce the available light. As a result of this slightly reduced light intensity temperature in a lined house should be kept slightly lower than the temperatures obtaining in an unlined house, and this is especially true for tomatoes, where the number of flowers on the bottom truss is increased by lower night temperatures during the seedling stage.

The foliage of plants should be prevented from touching the polythene lining; the leaves of some plants (e.g. Arum lilies) seem resistant to damage but others (e.g. cucumbers) scorch quickly if in contact with the moisture film on the plastic.

When fumigation against pest and disease is required it should be remembered that when the ventilators of a lined house are closed, the house is virtually sealed. As a result of this, good pest control can often be achieved by using smoke and aerosol formulations at lower rates than those specified by the manufacturers. Fumigation of lined houses with preparations containing azobenzene can cause temporary staining of the polythene, and sprays which contain petroleum oils (e.g. Volck) may slightly distort the polythene lining.

When houses are lined plants require less watering than previously. Indeed, in the U.S.A. houses are sometimes lined, not to conserve heat, but to reduce the labour costs of watering.

Partial lining

In low-pitched houses, where the shape of the roof is inadequate to shed condensed moisture, or in houses where winter light is considered to be of greater importance than fuel economy, partial lining, or perhaps the lining of only the vertical walls is sometimes practised. Where glasshouses are built on exposed situations considerable temperature increase can be achieved by lining the sides of the houses exposed to the wind.

Lining glasshouses with black polythene

Black polythene film has been used to heat, insulate and darken glasshouses in which crops of mushrooms, bulbs and forced rhubarb have been grown. Black polythene film of good quality is almost completely opaque at thicknesses of 0·0015 inch (150 gauge) and costs are similar to the clear material. Black film should not be used to line glasshouses before the autumn or sun heat can cause distortion of the polythene.

POLYTHENE FILM AS AN ALTERNATIVE TO GLASS

Until quite recently glass has been the only material associated with greenhouse cultivation; translucent plastic films offer possible alterna-

tives and it is worth while comparing the properties of polythene film with those of glass.

Glass is transparent and will last indefinitely without deterioration. It also has unique properties which allow a glasshouse to admit and retain heat energy from the sun. On the debit side, glass is expensive, brittle and heavy. Because of its weight, a substantial structure is required to support it.

Polythene film transmits as much visible light as glass and is light in weight (500 gauge—0·005 inch, the gauge generally used outside—is less than one-fiftieth the weight of horticultural glass). Because of its lightness the structure to support it can be light in weight, and consequently cheaper. Flexibility of the polythene gives the greenhouse designer greater scope in the shape, size and construction of his structures than was previously possible, and the material itself is cheaper than glass.

From the above comparison it would seem that polythene film has many advantages over the established material. However, in common with all translucent plastic films so far available in this country, polythene has two major disadvantages. In the first place it deteriorates slowly when exposed to the ultra-violet radiation in sunshine, which limits its useful life in this country to a period of between one and two years, depending on the amount of sunshine it receives. Secondly, although a polythene greenhouse admits the short-wave heat energy from the sun as readily as a glasshouse, because polythene, unlike glass, is transparent to long-wave (low-temperature) heat radiation, much of the absorbed heat is rapidly lost. This is a serious limitation because it means that when there is no incoming radiation from the sun, the temperature inside a polythene greenhouse falls rapidly. It also means that polythene greenhouses are difficult to heat by conventional hot water pipes, since much of the heat radiated from the pipes passes directly through the plastic (7).

The different properties of glass and polythene film dictate the uses to which the two materials can be put. Until a plastic with a longer life has been developed, the durability of glass is likely to ensure its continued use on permanent structures, while the light weight and flexibility of plastic will recommend it for portable structures which can be readily moved to cover different crops. Commercial growers have been quick to realize how profitable temporary portable plastic protection can be, and the amateur grower is able to build an inexpensive plastic greenhouse which will give good service and few disappointments providing he appreciates the limitations of polythene and is prepared to replace the film at intervals.

Temperatures in polythene greenhouses

As already mentioned, polythene not only admits the heat energy of the sun, but also permits the passage of much of the re-radiated heat given off by the plants and soil; thus lower temperatures are obtained

in polythene greenhouses than in glasshouses. It has been reported from Belgium that temperatures in polythene greenhouses will not exceed 40° C. (104° F.) in summer unless the outside air temperature rises above this figure (2). Moreover, after sunset the heat that has been stored up during the day will be lost more quickly from the plastic greenhouse. Two factors modify these observations—on a cold windy night a polythene house is less draughty than a glasshouse and when cold air is forced into a glasshouse through glass overlaps it displaces warmer air, resulting in lower temperatures. Also, the moisture which condenses on polythene makes the plastic opaque to low temperature radiation, and then it behaves more like glass.

Lower average temperatures in unheated plastic greenhouses usually result in crops reaching maturity some 7–10 days later than glasshouses of comparable size and shape.

Growing plants in polythene greenhouses

The function of a greenhouse is to provide an environment more favourable to plant growth than is obtained outside. The plant requirements which are modified by the greenhouse can be listed as light, heat, moisture and air.

It has already been mentioned that polythene transmits as much visible light as glass and more infra-red and ultra-violet light. It is doubtful how important ultra-violet light is for the growth and development of green plants. Van der Veen recently stated that "As far as our experience goes we never found any plant which developed better with than without ultra-violet. Ultra-violet is always somewhat detrimental" (10). Nevertheless, it has been reported that lettuce grown under a double layer of polythene had a higher vitamin content than those of the same variety grown under glass (2), a result which may be due to the extra ultra-violet light received by the plants. Also, observations of crops of tomatoes grown under polythene suggest that Tomato Leaf Mould (*Cladosporium fulvum*) is less troublesome under polythene than under glass, and it is possible that the extra ultra-violet light the plants under plastic receive may inhibit the spread of this disease.

Ventilation of greenhouses serves two purposes—it reduces the inside temperature and assures an adequate supply of carbon dioxide to the plants. One of the properties of polythene is that it allows gases to diffuse through it, and it is three times more permeable to carbon dioxide than to oxygen; even so, it is doubtful how important this property becomes in a greenhouse.

Using polythene to advantage

From what has been said it is evident that polythene film cannot be used to full advantage as a replacement for glass on conventional greenhouse structures. In some ways it is regrettable that the new material will, inevitably, be compared with glass and considered as an

alternative to it, since with plastic film completely new techniques are possible. The three main advantages of polythene are initial cheapness, flexibility and light weight, and it is these advantages which must be exploited if best use is to be made of the new material. With polythene, shelter can be specifically designed to suit individual crops, making it economically worth while to cover plants which could not previously be given protection. With some crops, simple protection against wind and rain is of primary importance and shelter may only be required in spring and autumn when solar radiation is not at its greatest. If protection is required only during these periods houses can be constructed of panels or "lights" of plastic, which have the advantage that the lights can be stacked and stored away in the shade in summer; in this way the useful life of the polythene can be extended into several seasons.

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THE INTERNATIONAL ROSE CONFERENCE

F. Fairbrother

(*President, National Rose Society*)

THE third International Rose Conference organized by the National Rose Society, in conjunction with the Society's Autumn Rose Show, was held in Church House, Westminster, from September 9–12. It was an unqualified success and was attended by a large number of members from Home and representatives from twelve countries Overseas.

The Conference was opened, under the Chairmanship of the then President, MR. A. NORMAN, by HER ROYAL HIGHNESS THE PRINCESS ROYAL, Patron of the Society, in a speech of gracious sincerity and good humour. HER ROYAL HIGHNESS set the high tone which was maintained throughout the week.

Immediately after the opening speech the then DEPUTY-PRESIDENT gave an account of the history of the National Rose Society and the development of the rose during the Society's lifetime of 82 years. He referred to the phenomenal increase in membership from 15,000 in 1947 to 60,000 in 1958 and attributed this, among other things, to an increasing love of the rose which was largely due to the improvement in form, colour and even scent of the flower in recent years.

The Shows in the two R.H.S. Halls were of a very high standard and particularly attractive was the sectional stand showing roses grouped in their country of origin. Some sixty varieties from the eleven countries represented were beautifully staged by lady members of the Society, the blooms being generously provided by members of the trade who were most co-operative. The President's International Trophy for the best new seedling rose of the year was awarded to an outstandingly brilliant orange-scarlet Floribunda 'Dickson's Flame' (Fig. 1), shown by A. Dickson and Sons, Newtownards, N. Ireland, while the Clay Challenge Vase for the best new British-raised seedling rose with scent was awarded to 'My Choice', a pale pink hybrid Tea rose flushed with yellow, which was shown by MR. E. B. LE GRICE.

Lectures on a variety of subjects were given during the week. These included "Rose Breeding" by HERR KORDES, "Foliar Feeding" by MR. SEYMOUR HEATLEY, "The Chemistry of the Rose Garden" by MR. B. M. DOUGALL, "Compost for Roses" by MR. E. F. ALLEN, "In Search of New Roses" by MR. SAM MCGREDY, "Roses in the Sunny South" by DR. A. THOMAS and "Practical Hints on Rose Growing" by MR. W. J. W. SANDAY. MR. HEATLEY's talk excited particular interest as he showed clearly the advantage of foliar feeding on his heavy clay soil near Dublin. He varied the balance of the various nutrients in accordance with the season. MR. GRAHAM THOMAS spoke on "Shrub Roses" and showed a large collection of slides demonstrating the mass of flower as well as the variety of colour that can be obtained from some of these. The question of plant patents, particularly for roses, was briefly discussed by the American raiser, MR. BOERING, who described some of his methods. The lectures, which were of a high standard, will be fully reported in the *Rose Annual* published by The National Rose Society. They were well attended and the enthusiastic audiences plied the lecturers with numerous questions.

Demonstrations of Floral Arrangements were given by MRS. BARKER and by MISS JULIA CLEMENTS and were greatly appreciated by the large number of members who were able to see them.

Visits were made to the R.H.S. Gardens at Wisley, to Kew Gardens, to the National Rose Society's Trial Ground at St. Albans, to the Queen

Mary Rose Garden in Regent's Park and to the rose nurseries of R. Harkness and Co. at Hitchin. All the visits proved attractive and instructive, and were enjoyed by many.

Not the least interesting were the social functions at which members had the great pleasure of meeting the great hybridists of the world and chatting with one another about their many rose problems.

Altogether the whole of the busy week was a huge success and reflected great credit on the organizers.

NOTES FROM FELLOWS

The Significance of the Transpiratory Loss of Water from Leaves

WHILE having great respect for the important experimental work on plant water relations by MR. E. J. WINTER at the National Vegetable Research Station, Wellesbourne, I would question the validity of one aspect of his theoretical interpretation, as discussed at the Masters Memorial Lecture on September 24, 1957 (1). In reply to a leading question from DR. LAKE, he dealt, to my mind, rather too leniently with the traditional view that the transpiratory loss of water from leaves, in the daytime, really is beneficial to the ordinary plant because of its effect of keeping the leaves cooler. Certainly it does, under natural conditions, keep the leaves cooler than they would otherwise be. But does the horticulturist spend more time and trouble keeping plants cool, to make them grow faster, or keeping them warm? Surely the latter. Extremely high temperatures will of course damage or kill any plant, and wide fluctuations are sometimes harmful. But, under natural conditions in the United Kingdom, the few degrees cooling caused by the evaporation of water from within the leaves and its subsequent diffusion out through the minute pores (stomata) seems likely, in the great majority of cases, to retard rather than to stimulate general growth. We may further note that the most luxuriant vegetation in the world occurs in the hot tropical rain forests; while the desert succulents—with their relatively new physiological régime—have very little transpiration at all during the hottest periods.

As more is learnt of the detailed functioning of plants, at the cytological and molecular level, a different interpretation is gaining ground as to the significance to the plant of transpiration. Most of the dry weight of a plant is derived from the gas, carbon dioxide, which the leaves take in from the air. There is only about 0·03 per cent of this gas present in ordinary air, that is 300 parts per million. By the process called photosynthesis, and with the aid of light energy, carbon dioxide and water molecules are synthesized—through a series of intermediate stages—to molecules of sugar; and from these molecules all the other organic molecules of the plant are eventually formed. (Since 1941 it has

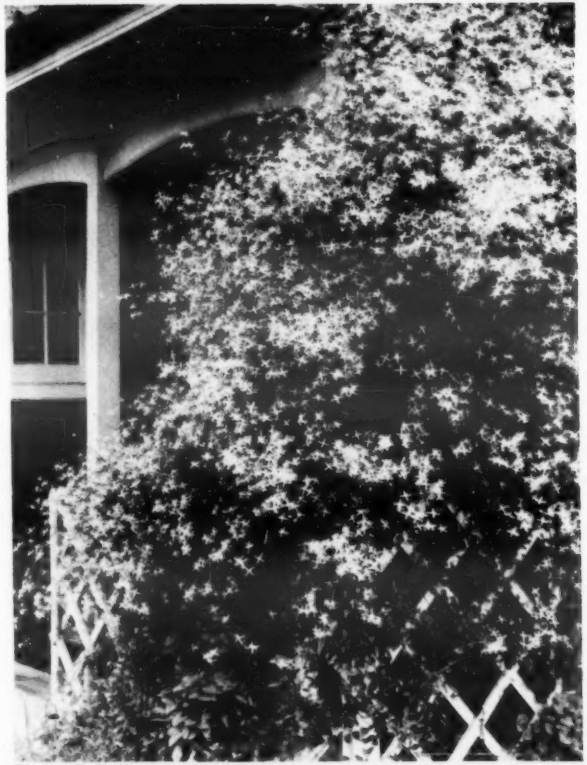
Photo: J. E. Downward

FIG. 1—Rose 'Dickson's Flame', a new floribunda raised by Messrs. Dickson & Sons, Newtownards, N. Ireland. The President's Trophy for the best new seedling rose of the year was awarded for this rose at the National Rose Society's Autumn Show (see p. 23).

Photo: J. E. Downward

CLEMATIS

FIG. 2—A fine specimen of *Clematis chrysocoma* in the Savill Gardens, Windsor Great Park (see p. 12).



Photos: J. E. Downward

FIG. 3—*Clematis flammula* (see p. 13).

FIG. 4—Clematis 'Nellie Moser'. One of the most free-flowering varieties. In shade the darker rays along centre of petal would be more distinct (see p. 12).

DAY LILIES

FIG. 5—Hemerocallis 'Glowing Gold', one of the best of the newer orange-yellow day lilies raised by Mrs. P. Nesmith (see p. 10).

FIG. 6—Hemerocallis 'Alan', a fine red variety raised by Mr. E. Claar.

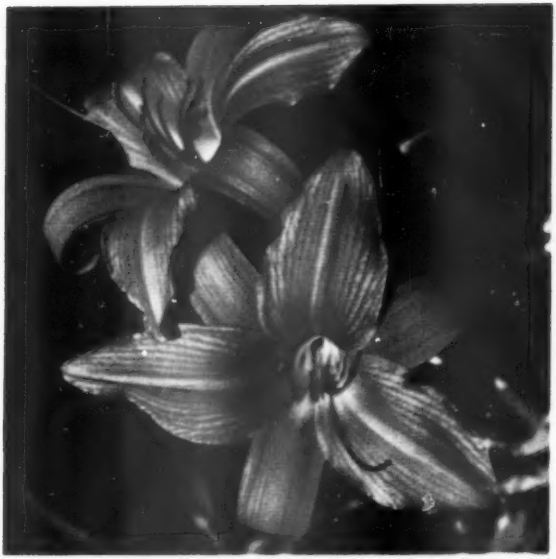


FIG. 7.—Hemerocallis 'Patricia Fay', one of the finest pink varieties raised by Mr. O. Fay.

FIG. 8—Hemerocallis 'Spring Hills', an unusual coloured variety raised by Mr. O. Fay.

Photo: British Visqueen Ltd.

FIG. 9—A lining of 150 (0·0015″) gauge polythene film being installed in a commercial glasshouse. The plastic sheeting is being fastened to the underside of the glazing bars with a stapling machine.

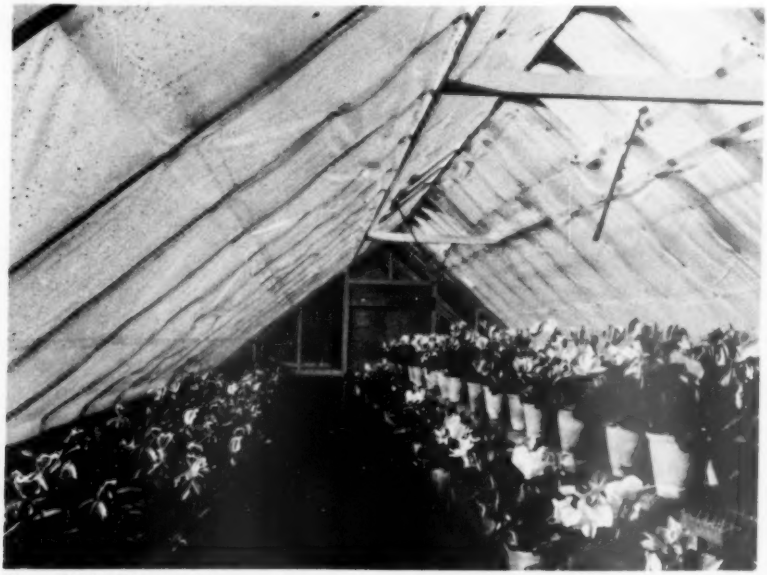


Photo: British Visqueen Ltd.

FIG. 10—A glasshouse containing orchids and cyclamen which has been lined to the ventilators.

FIG. 11—A small static plastic greenhouse made of 1½ in. × 1 in. rough-sawn timber. Although this is an experimental house—on which different types of plastic are being tested—such houses can be made very cheaply. In this case, the plastic is buried at ground-level to secure it.

Photo: British Visqueen Ltd.

FIG. 12—A portable polythene-clad structure in use over gladioli. Note that wires have been used to give support to the plastic.

Photo: J. E. Downward

FIG. 13—Hybrid lilies exhibited by the Oregon Bulb Farms on July 1 in the New Hall.

Top row: 'Limelight', pink *centifolium* hybrid, 'African Queen'. *Bottom row:* Emerald group and Royal Gold group

been shown by isotopic studies that the carbon dioxide molecules provide practically all the oxygen atoms as well as the carbon atoms in these sugar molecules, only the hydrogen atoms coming from the molecules of water.) Photosynthesis occurs in the chlorophyll-containing cells inside the leaf. But the only way that the molecules of carbon dioxide in the air can get to these inner leaf cells is by diffusion into the leaf from the air outside; and the "head" of pressure available to cause this inward movement is only the extremely small difference between 0·03 per cent and zero (2). Consequently, to reduce the resistance to this inward diffusion of carbon dioxide, the air passages in the leaf have to be as numerous, as short and as wide as possible, and the leaf surface has to have many small intake holes, the stomata. There are commonly a hundred thousand or so stomata per square inch of leaf surface. This has been the standard arrangement—with regard to transpiration and carbon dioxide intake—since the time of the first vascular land plants, which were fern relatives. It evolved some 350 million years ago, about the beginning of the geological period known as the Devonian. (The Old Red Sandstone of this period is conspicuous in Scotland and Devon.)

But the easier the diffusion pathway of precious carbon dioxide *into* the leaf, the easier also is the diffusion pathway of water molecules *out* of the leaf. That is the crux of the matter. If carbon dioxide is to be allowed to diffuse inwards, there is nothing to stop water evaporating from the moist inner leaf cells and diffusing outwards. In fact, during fine days, it is common for *many* water molecules to escape from the leaf out into the air, for every *one* molecule of carbon dioxide which diffuses inwards and is used in photosynthesis. This loss of water is now often regarded, from the point of view of the plant, mainly as a "necessary evil" (3). All the water lost in this way, by transpiration, has to be replaced by a similar amount of water being absorbed by the roots from the soil, or else the plant wilts or even dies. In emergencies of course the stomata are closed; but in this case the supply of carbon dioxide from the air is likewise cut off, and nutrition is impeded. Horticulturists are fully aware of the occasional dangers of water deficit, particularly in years other than 1958. Water is sometimes scarce; but on fine sunny days that other necessary food substance, carbon dioxide, is almost always in short supply. The structure and physiology of ordinary land plants has evolved in such a manner that to secure a reasonable intake of one very scarce food, carbon dioxide, another less scarce food substance, water, has to be allowed to evaporate copiously from the inner leaf cells and diffuse outwards; has to be allowed to "run to waste". But many ordinary plants have at least evolved the trick of keeping their stomata more or less closed at night. In the absence of light photosynthesis cannot occur, but every cell still continues to respire. This respiration, as also with animals, produces carbon dioxide gas. This can accumulate in the internal air spaces overnight; and a little "stuffiness" is not detrimental. So in the early morning the green leaf cells

can have a good "breakfast", photosynthesizing with the richer supply of carbon dioxide which has developed.

This "running to waste" of water vapour, from the green leaves of land plants, has occurred for some 350 million years. But more recently, probably mainly within the last 100 million or so years, several families of flowering plants—the succulents including cacti—have evolved a way of life by which they can reduce this dreadful transpirational water loss, and so thrive in very dry places. The trick seems to have been evolved by several groups of plants, independently. With their newer physiological régime they can actually, keep their stomata shut during the dry daytime (4, 5). Their respiratory products at night are not liberated as carbon dioxide gas, but stored as organic acids. And it seems not unlikely that in many cases carbon dioxide gas is also allowed to diffuse in during the dewy night, and this is changed temporarily into organic acids as well. These organic acids are then fed into the nutritional process of photosynthesis during the following day, in lieu of carbon dioxide direct from the outside air. The cells of such succulents are able to feed well in the daytime, while protected from the dry desert air by a leaf surface with a thick cuticle and *closed* stomata.

From the point of view of commercial glasshouse culture, it seems only a matter of time before the practice develops of feeding plants with extra carbon dioxide, in the air round the leaves, during sunny periods. On an experimental scale, this certainly can increase growth and yield (2, 3, 4, 5). But the source of the carbon dioxide has to be free from other injurious substances. The air from a chimney flue of course contains much extra carbon dioxide, but also other substances, such as sulphur compounds, which may be harmful (6).

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Pelargonium "*The Boar*"

I wonder if any Fellow can tell me the origin of this plant, which is sometimes known under the name of 'Salmonia' (not *salmoneum*, which is a good species).

The stock of this plant at Kew came originally from Tresco and is reputed to have been obtained by the late MAJOR DORRIEN SMITH from a garden in Madeira.

When this plant was shown before Floral Committee B in 1956 the Committee invited comments from MR. P. D. CLIFFORD, of the Caledonian Nurseries, Rainham, Kent, who reported that it was widely known in the U.S.A. as 'Dark Beauty' and was thought to be a hybrid of *P. frutetorum*, a species first described by DYER as lately as 1933, *Icones Plantarum*, t. 3200.

I have grown "The Boar" now for a number of years, and bed it out in the summer. For the last three years self-sown seedlings have appeared in an adjoining bed. These seedlings when grown on are indistinguishable from the parent plants; although in their early stages they have zoned leaves like *P. frutetorum* and they do not develop the almost black centre to the leaf, characteristic of "The Boar", until they are two or three months old.

I have compared "The Boar" with *P. frutetorum* growing in the Pelargonium house at Kew, and although there is a certain similarity between them, the differences are such as to make it improbable that "The Boar" is merely another clone of that species. Yet the fact that its seedlings are freely produced, and resemble the parent, points to the probability that it is itself a species and not a hybrid.

It would therefore be most interesting to learn its origin if this is known.

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Headbourne Worthy Grange,
Winchester, Hampshire.

Scent in Cyclamen neapolitanum

The note in the November issue of the JOURNAL from MR. LEWIS PALMER is very interesting. The fact that he has had a scented form from *Ephesus* suggests the possibility that Eastern forms may be more likely to have a scent than the Western ones. My own experience, though slight, suggests this.

During part of World War I my sister Winifred was Assistant Matron of 63rd General Hospital in the Salonika Force. The hospital was stationed about 9 kilometres north of Salonika, on the Seres Road, and on the slopes of the hills between Salonika and Baldza, where the first Salonika defences were constructed. In this area she found scented forms and, fortunately, sent tubers home. Many of the descendants of these are now in my possession and their flowers are very definitely scented. As MR. PALMER says the scent is similar to *C. europaeum*, but not so strong. I have not found the scent to go off after twenty-four hours, but with tubers carrying many flowers this might not be noticed.

I should add that I was in the same country where my sister collected in the early part of 1916, and in other parts of the Salonika front from then until June 1919. I found many of the cyclamen, but was not often in the right place at flowering time, but I never noticed a scented

form myself. I have many hundreds of *C. neapolitanum* here from various sources, but apart from the Salonika form no others appear to be scented. I have never had a scented white form.

D. BLANCHARD

Notes on Hellebores

Arising from my lecture, April 30, 1957 (R.H.S. JOURNAL, **82**, 279–93), I have received valuable information from correspondents and made some observations which I think are of sufficient interest to put on record.

On p. 283 I said, referring to the Christmas Roses, "At one time they were grown commercially for the Christmas trade". This remark resulted in a very interesting correspondence with a MR. BALDWIN, now 82, of Sale, Cheshire. Starting in 1906 he grew about one-eighth of an acre in cold greenhouses (at Timperley, Cheshire), for the market, and his successor continues at the same nursery. The original stock was bought as flowering size from local small growers and is still vigorous. I now have some of this and hope to be able to identify the variety when it flowers. The system followed is interesting as illustrating how good-natured this plant can be. The plants after two years in the open ground are brought into the cold greenhouses in mid-November, all leaves are removed and the plants packed tightly together.

In February or March, as soon as conditions are favourable, the plants are removed from the house, those big enough divided into two, and the requisite quantity for one-eighth of an acre planted in rich soil. The beds are spread thickly with six to twelve-months-old horse and cow manure, which is incorporated as the plants are put in. The crowns are buried two inches below the surface, which is then dressed with hydrated lime and this raked in. When the leaves appear, dried blood or a compound fertilizer is sown down the rows and scuffled in. In a dry March those newly planted are watered to prevent flagging. Half the plants are lifted each year, i.e. one-eighth of an acre of the quarter acre grown. This routine has been followed for fifty years on the same ground.

Hybrids. I hope that I disposed successfully of the theory that there is *H. niger* blood in the Lenten Roses (p. 289). Since then I have observed a peculiar character on the seeds of certain species. This character, as far as my observations go, is confined to *H. corsicus*, *lividus*, *niger*, *viridis* and, to a lesser extent, *H. foetidus*.

The seeds of all these show, particularly when freshly gathered, a whitish aril which dries to pale brown. In *H. niger*, *corsicus* and *H. lividus* × *corsicus* (I have not yet been able to examine the seed of true *H. lividus*) this aril is very definite and extends the whole length of the seed. In *H. viridis* it does the same, but is not so definite; in *H. foetidus* it is concentrated more or less at one end. None of the

Lenten hybrids or other species I have examined shows this phenomenon, only a ridge of skin the same colour as the seed itself.

Now the point is that in the species mentioned the only hybrids recorded are: *H. niger* × *corsicus*, *H. niger* × *lividus*, *H. corsicus* × *lividus* and vice-versa, and *H. corsicus* × *viridis* all having this aril!—none with species without this.

In connection with Iris, W. R. DYKES pointed out that those with differently shaped seed did not cross with one another.

H. × *intermedius* ("torquatus"). In discussing this plant I said that "it is possible that stocks vary as even in the wild it may cross back with one or other of its parents". Since then I have received plants of three stocks which differ in leaf character from my own, collected on Mt. Kaprovnik by MR. WALTER INGWERSEN. Of one from a nursery I have no further information as regards the flower, which I have not yet seen, but the donors of the other two are definite that the flower does not agree with my photograph or description. Particularly interesting is it that one was collected by DR. SELIGMAN on the same mountain at the same time as MR. INGWERSEN collected his. The evidence points to the third having come from Barr's fifty years ago.

As divisions take two years to establish I have not yet seen the flowers myself, but as soon as they appear I hope to make a coloured record of this interesting group.

E. B. ANDERSON

West Porlock,
Somerset.

HYBRID LILIES FROM OREGON

Gillian E. Peterson, N.D.H.

ON July 1 and 2 visitors to the Society's Fortnightly Show in the New Hall were able to see an exhibit of really spectacular lilies from the Oregon Bulb Farms, Gresham, Oregon, U.S.A. (Fig. 13). These flowering stems were sent by air specially for exhibition at this show. The boxes of flowers were received at London Airport on the evening of Sunday, June 29, unpacked at Vincent Square and placed in deep water after a fresh cut had been made removing about ½ inch from each stalk. The flowers had been very carefully packed with tissue paper between the flowers and a stronger waterproof paper between the stems. The anthers of any flowers that were open at the time of packing had been enclosed in a piece of tin foil to prevent the pollen from discolouring the perianth. This careful packing was most certainly responsible for the flowers' remarkably fresh condition. The following day the lilies, fifty-six stems in all, were staged by the Society's staff—one stem being put in each vase and kept firm by packing moss round the stems. Before putting them in the vases, the stems were split up the middle for 2–3

inches; it is claimed that this "trick" enables the stem to take up water more easily.

Among these flowers there were some hybrids of colours not seen in this country before. Perhaps the most outstanding was a group of six pink *centifolium* seedlings. They really were pink, and the Horticultural Colour Chart describes the colour of the reverse of the segments as Erythrite Red (H.C.C. 0027/1), and of the inside as Magenta Rose (H.C.C. 027/2). Another group of Royal Gold seedlings were also most impressive. These trumpet lilies were a rich Aureolin Yellow (H.C.C. 3/1) and are believed to be a "true-breeding mutation of *Lilium regale*". Each stem had the form and habit of *regale* and bore up to thirteen flowers.

There was also a fine display of Golden Clarion, a group which is becoming better known in this country now, and showing well the variation that may be expected from these lilies. They are, however, well worth growing and have so far proved to be a good garden plant in a number of British gardens. These flowers were various shades of aureolin yellow, the deepest yellow having brown-red shading on the reverse of the segments.

Two clones of particular note and which received Awards of Merit were 'African Queen' and 'Limelight'. The first, a trumpet lily, whose perianth segments were not very reflexed, was of a most unusual apricot colour inside with brown and red shading on the reverse. This particular stem carried sixteen flowers and buds. 'Limelight' was a brilliant yellow and the perianth segments were considerably reflexed. 'Green Dragon' was also an attractive lily, not unlike *brownii* but with a more open flaring trumpet with a green-yellow centre.

Two other groups were also represented, the Emerald and Sentinel. The former bore large white trumpets, some with a creamy yellow tint at the base of the perianth inside. The reverse of each segment was shaded with a pale lime-green. The Sentinel group also bore large white trumpets, but the segments in this case were more reflexed.

Two species which roused interest were *lankongense* and *taliense*. The latter rather resembles *duchartrei* in the form of its martagon-like flowers. The spotted white segments, however, are not quite so tightly reflexed. The graceful, pendulous and reflexed flowers of *lankongense* are also rather like those of *duchartrei* but are a pale rose in colour and slightly scented. Both these species were from DR. ROCK'S 1948 collection.

This was an altogether spectacular collection of flowers, and their condition after their long journey was remarkable.

WISLEY TRIALS, 1958

BORDER CARNATIONS

Sixty-six varieties of border carnations were grown at Wisley during 1958. Five plants of each variety were planted on November 18, 1957. The Joint Border Carnation and Picotee Committee of The Royal Horticultural Society and The British National Carnation Society inspected the trial on July 24, 1958, and on its recommendation The Royal Horticultural Society and The British National Carnation Society have made jointly the following awards to border carnations as varieties for the open border.

The number in brackets after the description of the variety was that under which it was grown in the trial.

SARAH ELIZABETH. (Raised and sent by Miss R. Goodfellow, Valley Nurseries, Aldridge, Staffs.) **H.C.** July 24, 1958. Described R.H.S. JOURNAL, **82,** p. 493 (**C.** 1957). [36]

SCARLET FRAGRANCE. (Raised, introduced and sent by Messrs. Allwood Bros. Ltd., Wivelsfield Nurseries, Haywards Heath, Sussex.) **H.C.** July 24, 1958. Described R.H.S. JOURNAL, **82,** p. 493 (**C.** 1957). [16]

SUSSEX ECLIPSE. (Raised, introduced and sent by Messrs. Allwood Bros. Ltd.) **C.** July 24, 1958. Plant vigorous with fairly stout stems, 29 inches long. Flowers 3 inches diameter, freely produced, centre full, no scent; petals broad, entire, margins incurving, ground Primrose Yellow (H.C.C. 601/3), striped Magenta Rose (H.C.C. 027/2); calyx strong. [53]

GARDEN PINKS

Ninety-five varieties of garden pinks were grown in the trial during 1958. Nine of these varieties were planted on small rocks on a site near the Alpine House in the Rock Garden. The remaining varieties were planted in an open border in the Floral Trial Grounds. Five plants of each variety were planted.

The Joint Dianthus Committee of The Royal Horticultural Society, The Alpine Garden Society and The British National Carnation Society inspected the trial on June 24, and July 7, 1958, and on its recommendation The Royal Horticultural Society, The Alpine Garden Society and The British National Carnation Society have made jointly the following awards to garden pinks.

The number in brackets after the description of the variety was that under which it was grown in the trial.

KATHLEEN HURST. (Raised by Mr. H. Hurst, introduced and sent by T. T. Burnett, Esq., 18 Penn's Road, Petersfield, Hants.) **A.M.** July 7, 1958, as a variety for the open border. Described R.H.S. JOURNAL, **82,** p. 494 (**H.C.** 1957). [21]

ROGER. (Raised, introduced and sent by Messrs. Allwood Bros. Ltd., Wivelsfield Nurseries, Haywards Heath, Sussex.) **A.M.** July 7, 1958, as a variety for the open border. Plant vigorous, bushy habit; flower stems 12 inches long, stout, rigid; flowers 2¼ inches diameter, double, centre full, scent strong clove; petals broad, serrated, Scarlet (H.C.C. between 19 and 19/1); calyx weak. [54]

ANNABELLE. (Raised and introduced by the late Mr. T. Carlile, sent by Messrs. Thomas Carlile (Loddon Nurseries) Ltd., Carlile's Corner,

Twyford, Berkshire.) **H.C.** June 24, 1958, as a variety for the rock garden. Plant vigorous, bushy erect habit; flower stems 4 to 6 inches long, slender, rigid; flowers 1¾ inches diameter, double, centre full, scent strong clove; petals broad, serrated, Roseine Purple (H.C.C. 629/2); calyx rather weak. [9]

GAIETY. (Raised, introduced and sent by Messrs. Lindabruce Nurseries Ltd., Freshbrook Road, Lancing, Sussex.) **H.C.** July 7, 1958, as a variety for the open border. Plant vigorous, bushy erect habit; flower stems 12 to 14 inches long, medium thickness, rigid; flowers 2 inches diameter, double, centre full, scent strong clove; petals broad, finely serrated, Solferino Purple (H.C.C. between 26/1 and 26/2) zoned Oxblood Red (H.C.C. 00823); calyx strong. [88]

SWANLAKE. (Raised, introduced and sent by Messrs. Lindabruce Nurseries Ltd.) **H.C.** June 24, 1958, as a variety for the open border. Plant vigorous, bushy erect habit; flower stems 12 to 14 inches long, medium thickness, rigid; flowers 2 inches diameter, double, centre full, scent strong clove; petals broad, deeply serrated, white; calyx strong. [67]

CLARKIAS

Forty-two stocks of clarkias were received for trial at Wisley in 1958. The trial was sown in the open ground in shallow drills spaced 1½ feet apart on April 11, 1958. The resulting seedlings were thinned and singled to leave each plant standing 1 foot apart in the row.

The trial was inspected by a sub-committee of the Floral Committee A on July 18, 25 and August 1, 1958, and on its recommendation the Council has made the following awards to clarkias.

Due to the wet season most of the plants grew taller than usual and the heights given in the following descriptions are greater than would be experienced in a more normal season.

The number in brackets after the description of the variety is that under which it was grown in the trial.

ALBATROSS. (Raised, introduced and sent by Messrs. Watkins & Simpson Ltd., 26–29 Drury Lane, Covent Garden, London, W.C.2.) **A.M.** July 25, 1958. Plant vigorous, compact, erect, 2½ to 2¾ feet tall; flower stems 24 to 30 inches long; flowers 1¼ inches diameter, double, white. [1]

CRIMSON QUEEN IMPROVED. (Raised, introduced and sent by Messrs. Hurst & Son Ltd., Kelvedon House, 60–64 Artillery Lane, London, E.1.) **A.M.** July 25, 1958. Plant vigorous, compact, erect, 3 to 4 feet tall; flower stems 30 to 36 inches long; flowers 1¼ inches diameter, double, a shade near Peony Purple (H.C.C. 729). [36]

MAY BLOSSOM IMPROVED. (Raised, introduced and sent by Messrs. Hurst & Son Ltd.) **A.M.** July 25, 1958. Plant large, vigorous, compact, erect, 3¾ to 4 feet tall; flower stems 30 to 36 inches long; flowers 1¾ inches diameter, double, Phlox Pink (H.C.C. 625/3) deepening to Phlox Pink (H.C.C. 625/1) at edges of petal. [12]

ROSY MORN. (Raised, introduced and sent by Messrs. Watkins & Simpson Ltd.) **A.M.** July 25, 1958. Plant vigorous, compact, erect, 3 to 3¼ feet tall; flower stems 33 to 36 inches long; flowers 1⅞ inches diameter, double, Tyrian Rose (H.C.C. 24/1). [21]

ROYAL BOUQUET MIXED. (Raised, introduced and sent by Messrs. Watkins & Simpson Ltd.) **A.M.** August 1, 1958. Plant vigorous, very com-

pact, very erect, 3¾ to 4 feet tall; flower stems 36 to 42 inches long; flowers 1½ inches diameter, double, good mixture of colours including white, shell-pink, salmon-pink, rose-pink, magenta and violet. [42]

SALMON BOUQUET. (Raised, introduced and sent by Messrs. Watkins & Simpson Ltd.) **A.M.** July 25, 1958. Plant vigorous, compact, erect, 3 to 3¾ feet tall; flower stems 34 to 42 inches long; flowers 1½ inches diameter, double, Porcelain Rose (H.C.C. 620) edges of petal flushed Neyron Rose (H.C.C. 623). [16]

BRILLIANT. (Raised, introduced and sent by Messrs. J. E. Ohlsens Enke, Linnesgade 14, Copenhagen, Denmark.) **H.C.** July 25, 1958. Plant vigorous, compact, erect, 3 to 3½ feet tall; flower stems 30 to 36 inches long; flowers 1⅝ inches diameter, double, Tyrian Rose (H.C.C. 24). [32]

CHIEFTAIN IMPROVED. (Raised, introduced and sent by Messrs. Hurst & Son Ltd.) **H.C.** July 25, 1958. Plant vigorous, compact, erect, 3 to 3¼ feet tall; flower stems 30 to 36 inches long; flowers 1¼ to 1½ inches diameter, double, Orchid Purple (H.C.C. 31/1). [40]

CRIMSON QUEEN. (Raised, introduced and sent by Messrs. Watkins & Simpson Ltd.) **H.C.** July 25, 1958. Plant vigorous, compact, erect, 3 to 3¼ feet tall; flower stems 24 to 34 inches long; flowers 1½ inches diameter, double, Peony Purple (H.C.C. 729). [34]

ENCHANTRESS IMPROVED. (Raised, introduced and sent by Messrs. Hurst & Son Ltd.) **H.C.** July 25, 1958. Plant vigorous, compact, erect, 3 to 3¾ feet tall; flower stems 36 to 40 inches long; flowers 1¾ inches diameter, double, Porcelain Rose (H.C.C. 620) fading to Porcelain Rose (620/2) at edges of petals. [8]

LADY SATIN ROSE. (Raised, introduced and sent by Messrs Hurst & Son Ltd.) **H.C.** July 25, 1958. Plant vigorous, compact, erect, 3 to 3½ feet tall; flower stems 30 to 36 inches long; flowers 1½ inches diameter, double, Crimson (H.C.C. between 22 and 22/1). [22]

MAY BLOSSOM. (Raised and introduced by Messrs. Hurst & Son Ltd., sent by Messrs. D. T. Brown & Co. Ltd., Premier Seed Warehouse, Poulton-le-Fylde, Lancashire.) **H.C.** August 1, 1958. Plant vigorous, compact, erect, 3½ to 4 feet tall; flower stems 30 to 36 inches long; flowers 1⅝ inches diameter, double, Solferino Purple (H.C.C. 26). [14]

MAY BLOSSOM CLAUDIA. (Raised, introduced and sent by Messrs. L. Clause, S.A., Bretigny-sur-Orge, France.) **H.C.** July 25, 1958. Plant vigorous, compact, erect, 4 to 4½ feet tall; flower stems 36 to 46 inches long; flowers 1½ inches diameter, double, Solferino Purple (H.C.C. 26). [13]

ORANGE KING. (Raised, introduced and sent by Messrs. Watkins & Simpson Ltd.) **H.C.** July 25, 1958. Plant vigorous, compact, erect, 2¾ feet tall; flower stems 24 to 30 inches long; flowers 1⅝ inches diameter, double. Scarlet (H.C.C. 19/1) tinged Neyron Rose (H.C.C. 623/1) at edges of petal. [26]

SALMON PERFECTION IMPROVED. (Raised, introduced and sent by Messrs. Hurst & Son Ltd.) **H.C.** July 25, 1958. Plant vigorous, compact, erect, 3 to 3½ feet tall; flower stems 30 to 36 inches long; flowers 1⅝ inches diameter, double, a clear shade of Scarlet. (H.C.C. between 19 and 19/1). [25]

SALMON QUEEN RESELECTED. (Raised, introduced and sent by Messrs. Hurst & Son Ltd.) **H.C.** July 25, 1958. Plant vigorous, compact, erect, 4½ to 5½ feet tall; flower stems 36 to 48 inches long; flowers 1⅝ inches diameter, double, Porcelain Rose (H.C.C. between 620 and 620/1). [19]

Twyford, Berkshire.) **H.C.** June 24, 1958, as a variety for the rock garden. Plant vigorous, bushy erect habit; flower stems 4 to 6 inches long, slender, rigid; flowers 1⅜ inches diameter, double, centre full, scent strong clove; petals broad, serrated, Roseine Purple (H.C.C. 629/2); calyx rather weak. [9]

GAIETY. (Raised, introduced and sent by Messrs. Lindabruce Nurseries Ltd., Freshbrook Road, Lancing, Sussex.) **H.C.** July 7, 1958, as a variety for the open border. Plant vigorous, bushy erect habit; flower stems 12 to 14 inches long, medium thickness, rigid; flowers 2 inches diameter, double, centre full, scent strong clove; petals broad, finely serrated, Solferino Purple (H.C.C. between 26/1 and 26/2) zoned Oxblood Red (H.C.C. 00823); calyx strong. [88]

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CLARKIAS

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The trial was inspected by a sub-committee of the Floral Committee A on July 18, 25 and August 1, 1958, and on its recommendation the Council has made the following awards to clarkias.

Due to the wet season most of the plants grew taller than usual and the heights given in the following descriptions are greater than would be experienced in a more normal season.

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pact, very erect, 3¾ to 4 feet tall; flower stems 36 to 42 inches long; flowers 1½ inches diameter, double, good mixture of colours including white, shell-pink, salmon-pink, rose-pink, magenta and violet. [42]

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ENCHANTRESS IMPROVED. (Raised, introduced and sent by Messrs. Hurst & Son Ltd.) **H.C.** July 25, 1958. Plant vigorous, compact, erect, 3 to 3¾ feet tall; flower stems 36 to 40 inches long; flowers 1¾ inches diameter, double, Porcelain Rose (H.C.C. 620) fading to Porcelain Rose (620/2) at edges of petals. [8]

LADY SATIN ROSE. (Raised, introduced and sent by Messrs Hurst & Son Ltd.) **H.C.** July 25, 1958. Plant vigorous, compact, erect, 3 to 3½ feet tall; flower stems 30 to 36 inches long; flowers 1½ inches diameter, double, Crimson (H.C.C. between 22 and 22/1). [22]

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MAY BLOSSOM CLAUDIA. (Raised, introduced and sent by Messrs. L. Clause, S.A., Bretigny-sur-Orge, France.) **H.C.** July 25, 1958. Plant vigorous, compact, erect, 4 to 4½ feet tall; flower stems 36 to 46 inches long; flowers 1½ inches diameter, double, Solferino Purple (H.C.C. 26). [13]

ORANGE KING. (Raised, introduced and sent by Messrs. Watkins & Simpson Ltd.) **H.C.** July 25, 1958. Plant vigorous, compact, erect, 2¾ feet tall; flower stems 24 to 30 inches long; flowers 1⅝ inches diameter, double. Scarlet (H.C.C. 19/1) tinged Neyron Rose (H.C.C. 623/1) at edges of petal. [26]

SALMON PERFECTION IMPROVED. (Raised, introduced and sent by Messrs. Hurst & Son Ltd.) **H.C.** July 25, 1958. Plant vigorous, compact, erect, 3 to 3½ feet tall; flower stems 30 to 36 inches long; flowers 1⅝ inches diameter, double, a clear shade of Scarlet. (H.C.C. between 19 and 19/1). [25]

SALMON QUEEN RESELECTED. (Raised, introduced and sent by Messrs. Hurst & Son Ltd.) **H.C.** July 25, 1958. Plant vigorous, compact, erect, 4½ to 5½ feet tall; flower stems 36 to 48 inches long; flowers 1⅝ inches diameter, double, Porcelain Rose (H.C.C. between 620 and 620/1). [19]

DELPHINIUMS

The trial of delphiniums was inspected by the Joint Delphinium Committee of The Royal Horticultural Society and The Delphinium Society on June 23 and July 4, 1958, and on its recommendation The Royal Horticultural Society and The Delphinium Society have made the following awards to delphiniums as varieties for garden decoration.

The number in brackets after the description of the variety was that under which it was grown in the trial.

GUY LANGDON. (Raised, introduced and sent by Messrs. Blackmore & Langdon, Twerton Hill Nursery, Bath, Somerset.) **F.C.C.** June 23, 1958. Described R.H.S. JOURNAL, **81,** p. 40 (**A.M.** 1955). [63]

BETTY HAY. (Raised, introduced and sent by Messrs. Blackmore & Langdon.) **A.M.** July 4, 1958. An *elatum* variety. Plant 6½ to 7 feet tall; flower spike 3 feet long, 6 inches diameter at base, tapering, flowers closely spaced, many side spikes; flower 2½ inches diameter, semi-double, on long stalks; sepals a clear shade of Cobalt Blue (H.C.C. 44/1); eye white with yellow hairs. [27]

EMIR. (Raised, introduced and sent by Messrs. Blackmore & Langdon.) **A.M.** June 23, 1958. An *elatum* variety. Plant 5½ to 5¾ feet tall; flower spike 2 to 2½ feet long, 6 inches diameter at base, very slightly tapered, flowers closely spaced, few side spikes; flower 3¼ inches diameter, semi-double, on long stalk; outer sepals Spectrum Violet (H.C.C. 735/1) fading to Spectrum Violet (H.C.C. 735/3) towards base and overlaid Gentian Blue (H.C.C. 42) along centre; inner sepals Spectrum Violet (H.C.C. 735/1) fading to Spectrum Violet (H.C.C. 735/3) towards base and touched Gentian Blue (H.C.C. 42) at base; eye cream striped violet with yellow hairs. [57]

GREAT BRITAIN. (Raised by the late Mr. Frank Bishop, introduced and sent by Messrs. Bakers' Nurseries Ltd., Codsall, Wolverhampton, Staffs.) **A.M.** June 23, 1958. An *elatum* variety. Plant 5½ to 5¾ feet tall; flower spike 2½ feet long, 5½ inches diameter at base, slightly tapered, flowers fairly closely spaced, many side spikes; flower 3¼ inches diameter, semi-double, on long stalk; outer sepals Cobalt Violet (H.C.C. 634/2) touched Spectrum Blue (H.C.C. 45/2); inner sepals Cobalt Violet (H.C.C. 634/2) touched Spectrum Blue (H.C.C. 45/2) at base; eye white with yellow hairs. [55]

JUDY KNIGHT. (Raised, introduced and sent by A. T. Knight, Esq., White Ness, West Clandon, Surrey.) **A.M.** June 23, 1958. Described R.H.S. JOURNAL, **82,** p. 405 (**H.C.** 1957). [10]

LOLA. (Raised, introduced and sent by Messrs. Blackmore & Langdon.) **A.M.** June 23, 1958. Described R.H.S. JOURNAL, **81,** p. 455 (**H.C.** 1956). [21]

SENTINEL. (Raised, introduced and sent by Messrs. Blackmore & Langdon.) **A.M.** June 23, 1958. An *elatum* variety. Plant 7½ to 8 feet tall; flower spike 3¾ to 4 feet long, 7 inches diameter at base, slightly tapered, flowers fairly closely spaced, side spikes fairly plentiful; flower 3 inches diameter, semi-double, on long stalk; sepals a velvety shade of Spectrum Violet (H.C.C. 735) slightly paler colour towards base with outer sepals slightly touched Gentian Blue (H.C.C. 42); eye sepia striped violet with yellow hairs. [43]

SONATA. (Raised, introduced and sent by Messrs. Blackmore & Langdon.) **A.M.** July 4, 1958. An *elatum* variety. Plant 7½ feet tall; flower spike

2¾ to 3¼ feet long, 6¼ inches diameter at base, tapering, flowers closely spaced, many side spikes; flower 2½ inches diameter, semi-double, on long stalk; outer sepals Spectrum Blue (H.C.C. 45); inner sepals Spectrum Blue (H.C.C. 45) overlaid in places with Mauve (H.C.C. 633/2); eye white with yellow hairs. [14]

WESSEX. (Raised, introduced and sent by Messrs. Blackmore & Langdon.) **A.M.** July 4, 1958. Described R.H.S. JOURNAL, **82,** p. 406 (**H.C.** 1957). [61]

BLUE TIT. (Raised, introduced and sent by Messrs. Blackmore & Langdon.) **H.C.** June 23, 1958. A dwarf *elatum* variety. Plant 4 feet 2 inches tall; flower spike 1½ feet long, 5 inches diameter at base, slightly tapered, flowers closely spaced, many side spikes; flower 2¾ inches diameter, semi-double, on fairly long stalk; sepals Cornflower Blue (H.C.C. 742/1) slightly paler colour towards base, margins lightly overlaid in places with Campanula Violet (H.C.C. 37/1); eye brown with yellow hairs. [46]

CÔTE D'AZUR. (Raised, introduced and sent by Messrs. Blackmore & Langdon.) **H.C.** July 4, 1958. An *elatum* variety. Plant 5¾ to 6 feet tall; flower spike 3 feet long, 6 inches diameter at base, tapering, flowers fairly closely spaced, many side spikes; flower 2¾ inches diameter, semi-double, on long stalk; sepals a colour near Gentian Blue (H.C.C. 42) touched at tips Violet (H.C.C. 36/1); eye white with yellow hairs. [36]

NICOTIANAS

Eight stocks of nicotiana were received for trial at Wisley in 1958. The trial was sown under glass on March 27, 1958, and the resulting seedlings were pricked off into seed trays on April 15, 1958. The plants were planted out into the open where they were intended to flower, in rows 2 feet apart, spacing the plants 1½ feet apart in the rows, on June 3, 1958.

The trial was inspected by a sub-committee of the Floral Committee A on July 25, August 1 and 8, 1958, and on its recommendation the Council has made the following awards to nicotianas.

The number in brackets after the description of the variety was that under which it was grown in the trial.

SENSATION MIXED. (Raised, introduced and sent by Messrs. Watkins & Simpson Ltd., 26/29 Drury Lane, Covent Garden, London, W.C.2.) **F.C.C.** August 8, 1958. Plant 30 to 32 inches tall, 18 to 24 inches wide, very vigorous, erect, free flowering. Flower stems long, slender, rigid; flowers 2 inches diameter, mixed colours, white, lavender, magenta, crimson, purple, violet; tube 1½ inches long. [7]

CRIMSON BEDDER. (Raised, introduced and sent by Messrs. Watkins & Simpson Ltd.) **A.M.** August 8, 1958. Plant 16 to 20 inches tall, 20 to 24 inches wide, vigorous, very compact, free flowering. Flower stems rigid; flowers 2½ inches diameter, a deep velvety crimson near Chrysanthemum Crimson (H.C.C. 824); tube 1½ inches long. [5]

CRIMSON KING. (Raised, introduced and sent by Messrs. Watkins & Simpson Ltd.) **A.M.** July 25, 1958. Plant 22 to 24 inches tall, 18 to 20 inches wide, vigorous, erect, free flowering. Flower stems long, upright, stout; flowers 2¾ inches diameter, a deep velvety red between Rose Red (H.C.C. 724) and Chrysanthemum Crimson (H.C.C. 824); tube 1 inch long. [6]

SENSATION MIXED IMPROVED. (Raised and sent by Messrs. Bodger Seeds Ltd., Box 390, El Monte, California, U.S.A.) **A.M.** July 25,

1958. Plant 29 to 30 inches tall, 18 to 22 inches wide, vigorous, erect, free flowering. Flower stems strong, upright; flowers 2 inches diameter, mixed colours, white, magenta, crimson, purple; tube 1 inch long. [8]

WHITE BEDDER. (Raised, introduced and sent by Messrs. Watkins & Simpson Ltd.) **A.M.** July 25, 1958. Plant 16 to 18 inches tall, 18 to 20 inches wide, vigorous, very compact, free flowering. Flower stems branching, upright; flowers 2¼ inches diameter, white; tube 1½ inches long. [1]

DAYLIGHT. (Raised, introduced and sent by Messrs. Watkins & Simpson Ltd.) **H.C.** August 8, 1958. Plant 18 to 20 inches tall, 9 to 12 inches wide, vigorous, erect, free flowering. Flower stems slender, upright; flowers 1⅝ inches diameter, white; tube 1¾ inches long. [2]

SUMMER CAULIFLOWERS

Eighty-seven stocks of summer cauliflower were received for trial at Wisley during the summer of 1957. The trial was sown thinly in rows 1 foot apart in cold frames on September 20, 1957. The resulting seedlings were potted into 3-inch pots on November 11, 1957, the pots were then plunged to the rim in soil and covered with continuous cold frames. The frames were protected with straw during very cold weather. The trial was planted out into the open ground on March 31, 1958, in rows 1½ feet apart and each plant was spaced 1½ feet apart in the row. The land was single dug during October 1957, incorporating a good dressing of well-rotted farmyard manure. A base dressing of fertilizer was given at the rate of 4 cwt. per acre of hoof meal, 2 cwt. per acre of bone meal and 2 cwt. per acre sulphate of potash, eighteen days before the trial was planted. A dressing of 4 per cent calomel dust was applied at the time of planting to control Club Root (*Plasmodiophora brassicae*). A solution containing 0·02 per cent gamma BHC was applied as a surface drench to the plants to control Cabbage Root Fly (*Erioischia brassicae*).

The trial was inspected by a sub-committee of the Fruit and Vegetable Committee on June 13, 20, 27 and July 4, 1958, and on its recommendation the Council has made the following awards to summer cauliflower.

The number in brackets after the description of the stock is that under which it was grown in the trial.

ELSOMS EARLY SNOWBALL. (Raised, introduced and sent by Messrs. Elsoms (Spalding) Ltd., Elsom House, Spalding, Lincs.) **F.C.C.** June 13, 1958. Plant large, 24 to 30 inches tall, 24 inches wide, compact, erect; leaves large, medium green. Head 7 inches diameter, close and firm, white. Crop early, very uniform, fit for use on June 4. [35]

MECHELEN IMPROVED. (Raised, introduced and sent by Messrs. Sluis Bros. Ltd., Enkhuizen, Holland.) **F.C.C.** June 13, 1958. Plant medium size, 20 inches tall, 21 inches wide, compact, erect; leaves medium size, light to medium green. Head 5½ inches diameter, close and firm, white. Crop very uniform, fit for use on June 11. [72]

RECORD. (Sent by Messrs. Jacob Jong Seed Co., Noordscharwoude, Holland.) **F.C.C.** June 20, 1958. Plant large, 24 inches tall, 20 inches wide, compact, erect; leaves large, medium green. Head 5 inches diameter, close and firm, white. Crop long-standing, very uniform, fit for use on June 15. [63]

BRIO. (Raised, introduced and sent by Messrs. J. E. Ohlsens Enke, Copenhagen, Denmark.) **A.M.** June 20, 1958. Plant medium size, 18 inches

tall, 26 inches wide, compact, erect; leaves medium size, light to medium green. Head 5 inches diameter, close and firm, white. Crop uniform, fit for use on June 18. [75]

CANTAB. (Raised, introduced and sent by Messrs. Harrison & Sons (Leicester) Ltd., St. James Street, Leicester.) **A.M.** June 13, 1958. Plant large, 28 inches tall, 24 inches wide, erect; leaves large, medium green. Head 6½ inches diameter, close and firm, white. Crop uniform, fit for use on June 8. [39]

CODANIA. (Raised, introduced and sent by Messrs. A. Hansen, Kastrup, Amager, Denmark.) **A.M.** June 20, 1958. Plant large, 24 inches tall, 29 inches wide, erect; leaves large, medium green. Head 7 inches diameter, close and firm, bright white. Crop uniform, fit for use on June 16. [40]

ELSOMS PINCHBECK FAVOURITE. (Raised, introduced and sent by Messrs. Elsoms (Spalding) Ltd.) **A.M.** June 13, 1958. Plant large, 25 inches tall, 19 inches wide, erect; leaves large, medium green. Head 7 inches diameter, close and firm, white. Crop uniform, fit for use on June 8. [34]

ERFURTER EARLY. (Raised, introduced and sent by Messrs. J. E. Ohlsens Enke.) **A.M.** June 20, 1958. Plant fairly large, 22 inches tall, 24 inches wide, compact, erect; leaves fairly large, medium green. Head 7 inches diameter, close and firm, white. Crop uniform, fit for use on June 17. [66]

LUCULLUS. (Raised, introduced and sent by J. E. Ohlsens Enke.) **A.M.** June 13, 1958, as a variety suitable for frame cultivation. Plant medium size, 17 inches tall, 20 inches wide, very compact, very erect; leaves medium size, medium to dark green. Head 6 inches diameter, close and firm, white. Crop early, uniform, fit for use on June 4. [76]

REAL. (Raised, introduced and sent by Messrs. Nunhem Seed Co., Haelen (Lb), Holland.) **A.M.** June 13, 1958. Plant medium size, 17 inches tall, 20 inches wide, fairly compact, erect; leaves medium size, medium green. Head 5½ inches diameter, close and firm, white. Crop uniform, fit for use on June 8. [85]

SELANDIA IMPROVED. (Raised, introduced and sent by Messrs. J. E. Ohlsens Enke.) **A.M.** June 27, 1958. Plant medium size, 21 inches tall, 26 inches wide, compact, erect; leaves medium size, medium green. Head 6 inches diameter, close and firm, white. Crop uniform, fit for use on June 23. [80]

SNOWBALL Y. (Raised, introduced and sent by Messrs. Ferry-Morse Seed Co., Mountain View, California, U.S.A.) **A.M.** June 20, 1958. Plant large, 23 inches tall, 24 inches wide, compact, erect; leaves large, medium green. Head 7 inches diameter, close and firm, white. Crop uniform, fit for use on June 17. [16]

SUPER ROMAX. (Raised by Mr. J. P. Rood, introduced and sent by Messrs. Oudijk Bros., Waddinxveen, Holland.) **A.M.** June 13, 1958. Plant large, 22 inches tall, 21 inches wide, compact, erect; leaves medium size, medium green. Head 6 inches diameter, close and firm, white. Crop uniform, fit for use on June 7. [69]

TOWER. (Raised by Mr. J. P. Rood, introduced and sent by Messrs. Oudijk Bros.) **A.M.** June 20, 1958. Plant large, 26 inches tall, 24 inches wide, fairly compact, erect; leaves large, medium green. Head 8 inches diameter, close and firm, white. Crop uniform, fit for use on June 16. [56]

ALL THE YEAR ROUND ORIGINAL. (Raised by the late Mr. J. Driancourt, France, sent by Messrs. A. L. Tozer Ltd., Pyports, Church

Street, Cobham, Surrey.) **H.C.** June 27, 1958. Plant fairly large, 21 inches tall, 24 inches wide, compact, erect; leaves medium to large, dark green. Head 8 inches diameter, close and firm, creamy white. Crop uniform, fit for use on June 23. [6]

ALPHA. (Sent by Messrs. Wed. P. de Jongh Ltd., Goes, Holland.) **H.C.** June 20, 1958. Plant large, 24 inches tall, 29 inches wide, spreading; leaves large, medium green. Head 7 inches diameter, close, white. Crop uniform, fit for use on June 19. [51]

ALPHA. (Raised, introduced and sent by Messrs. Sluis Bros. Ltd.) **H.C.** June 27, 1958. Plant large, 27 inches tall, 28 inches wide, spreading; leaves large, medium green. Head 7 inches diameter, close and firm, white. Crop uniform, fit for use on June 23. [52]

AVALANCHE. (Raised, introduced and sent by Messrs. L. Clause, S.A., Bretigny-sur-Orge, France.) **H.C.** June 13, 1958. Plant large, 24 inches tall, 19 inches wide, erect; leaves large, medium green. Head 6½ inches diameter, close and firm, white. Crop uniform, fit for use on June 11. [64]

CLUSEED EARLY GOLIATH. (Raised, introduced and sent by Messrs. J. L. Clucas Ltd., Ormskirk, Lancashire.) **H.C.** July 4, 1958. Plant large, 24 inches tall, 28 inches wide, compact, erect; leaves medium size, medium to dark green. Head 7 inches diameter, close and firm, creamy white. Crop uniform, fit for use on July 1. [7]

CLUSEED SNOWDRIFT IMPROVED. (Raised, introduced and sent by Messrs. J. L. Clucas Ltd.) **H.C.** June 13, 1958. Plant fairly large, 24 inches tall, 16 inches wide, erect; leaves large, medium green. Head 6½ inches diameter, close and firm, white. Crop uniform, fit for use on June 9. [33]

EARLY SNOWBALL. (Raised, introduced and sent by Messrs. J. L. Clucas Ltd.) **H.C.** June 13, 1958. Plant large, 24 inches tall, 22 inches wide, compact, erect; leaves large, medium green. Head 7½ inches diameter, close and firm, white. Crop uniform, fit for use on June 6. [18]

EARLIEST SNOWBALL REMO. (Raised, introduced and sent by Messrs. Sluis Bros. Ltd.) **H.C.** June 13, 1958. Plant large, 24 inches tall, 21 inches wide, erect; leaves large, medium green. Head 6½ inches diameter, hard, white. Crop early, uniform, fit for use on June 5. [25]

EVEREST. (Raised, introduced and sent by Messrs. Vilmorin-Andrieux, S.A., 4 Quai de la Mégisserie, Paris, France.) **H.C.** June 20, 1958. Plant large, 20 inches tall, 25 inches wide, compact, erect; leaves medium size, medium green. Head 6 inches diameter, close and firm, white. Crop uniform, fit for use on June 19. [65]

FORTIFIVE. (Raised, introduced and sent by Messrs. Harrison & Sons (Leicester) Ltd.) **H.C.** June 20, 1958. Plant large, 27 inches tall, 27 inches wide, erect; leaves large, medium green. Head 8 inches diameter, close, white. Crop uniform, fit for use on June 15. [60]

GLOBE. (Raised, introduced and sent by Messrs. Gebr. Broersen's, Harenkarspel, post Tuitjenhorn, Holland.) **H.C.** June 20, 1958. Plant large, 24 inches tall, 29 inches wide, erect; leaves large, medium green. Head 8 inches diameter, close and firm, white. Crop uniform, fit for use on June 17. [59]

IDOL. (Raised, introduced and sent by Messrs. J. E. Ohlsens Enke.) **H.C.** June 27, 1958. Plant large, 22 inches tall, 28 inches wide, erect; leaves large, medium green. Head 7 inches diameter, close and firm, white. Crop uniform, fit for use on June 25. [77]

IDOL IMPROVED. (Raised, introduced and sent by Messrs. J. E.

Ohlsens Enke.) **H.C.** June 27, 1958. Plant large, 23 inches tall, 27 inches wide, compact, erect; leaves medium size, medium green. Head 7 inches diameter, close and firm, white. Crop uniform, fit for use on June 25. [79]

IGLO. (Raised, introduced and sent by Messrs. J. E. Ohlsens Enke.) **H.C.** June 27, 1958. Plant medium to large, 21 inches tall, 30 inches wide, compact, erect; leaves medium size, medium green. Head 7 inches diameter, close and firm, white. Crop uniform, fit for use on June 24. [68]

IMPROVED EARLY LONDON. (Raised, introduced and sent by Messrs. Wed. P. de Jongh Ltd.) **H.C.** June 20, 1958. Plant large, 24 inches tall, 30 inches wide, compact, erect; leaves large, light to medium green. Head 9 inches diameter, close, white. Crop uniform, fit for use on June 17. [11]

ROMAX BROADLEAVED. (Raised by Mr. J. P. Rood, introduced and sent by Messrs. Oudijk Bros.) **H.C.** June 13, 1958. Plant fairly large, 21 inches tall, 24 inches wide, compact, erect; leaves medium size, medium green. Head 5½ inches diameter, close and firm, white. Crop uniform, fit for use on June 10. [70]

ROMAX PURE WHITE. (Raised by Mr. J. P. Rood, introduced and sent by Messrs. Oudijk Bros.) **H.C.** June 13, 1958. Plant fairly large, 19 inches tall, 24 inches wide, compact, erect; leaves medium size, medium green. Head 5 inches diameter, close and firm, white. Crop uniform, fit for use on June 9. [71]

SNOWBALL HANSA. (Raised, introduced and sent by Messrs. A. Hansen.) **H.C.** June 20, 1958. Plant large, 27 inches tall, 33 inches wide, spreading; leaves large, medium to dark green. Head 9 inches diameter, firm, white. Crop uniform, fit for use on June 15. [21]

SNOWBALL M. (Raised, introduced and sent by Messrs. Ferry-Morse Seed Co.) **H.C.** June 20, 1958. Plant large, 21 inches tall, 24 inches wide, compact, erect; leaves medium size, medium green. Head 7 inches diameter, close, white. Crop uniform, fit for use on June 18. [14]

SNOWBALL REX. (Raised, introduced and sent by Messrs. A. Hansen.) **H.C.** June 13, 1958. Plant large, 27 inches tall, 19 inches wide, erect; leaves large, medium to dark green. Head 6½ inches diameter, firm, white. Crop uniform, fit for use on June 6. [20]

SNOWBALL X. (Raised, introduced and sent by Messrs. Ferry-Morse Seed Co.) **H.C.** June 20, 1958. Plant large, 22 inches tall, 22 inches wide, compact, erect; leaves medium size, medium green. Head 7 inches diameter, close, white. Crop uniform, fit for use on June 18. [15]

SNOWDRIFT. (Sent by Messrs. Samuel Dobie & Son Ltd., 11 Grosvenor Street, Chester.) **H.C.** June 20, 1958. Plant large, 27 inches tall, 39 inches wide, erect; leaves large, medium green. Head 9 inches diameter, close, white. Crop uniform, fit for use on June 18. [32]

SUMMER. (Raised, by Mr. J. P. Rood, introduced and sent by Messrs. Oudijk Bros.) **H.C.** June 20, 1958. Plant large, 27 inches tall, 32 inches wide, erect; leaves large, medium green. Head 7 inches diameter, close, white. Crop uniform, fit for use on June 19. [55]

DWARF BEDDING DAHLIAS, RAISED FROM SEED

Twenty-nine stocks of dwarf bedding dahlias were received for trial at Wisley in 1958. The trial was sown under glass on March 14, 1958, and the resulting seedlings were pricked off into seed trays on April 7, 1958. The

plants were planted out into the open, where they were intended to flower, in rows 21 inches apart, spacing the plants 15 inches apart in the rows, on June 3, 1958.

The trial was inspected by a sub-committee of the Floral Committee A on August 8, 19, and September 11, 1958, and on its recommendation the Council has made the following awards to dwarf bedding dahlias raised from seed.

Due to the wet season, the heights given in the following descriptions are greater than would be experienced in a more normal season. The number in brackets after the description of the variety was that under which it was grown in the trial.

COLTNESS HYBRIDS IMPROVED. (Raised, introduced and sent by Messrs. Watkins & Simpson Ltd., 26–29 Drury Lane, Covent Garden, London, W.C.2.) **H.C.** August 19, 1958. Plant 24 to 30 inches high, compact and erect, bearing flower stems 10 to 12 inches long. Flowers 3½ to 3¾ inches diameter, single, freely produced; florets medium length, broad, slightly pointed to blunt, slightly overlapping, flat to slightly channelled, mixed colours including yellow, orange, red, scarlet, cherry, magenta, rose and mauve. [13]

COLTNESS HYBRIDS RESELECTED. (Raised, introduced and sent by Messrs. Hurst & Son Ltd., Kelvedon House, 60–64 Artillery Lane, London, E.1.) **H.C.** August 19, 1958. Plant 24 to 28 inches high, bushy, compact and erect, bearing flower stems 9 to 12 inches long. Flowers 3½ to 3¾ inches diameter, single, freely produced; florets medium length, broad, slightly pointed to blunt, slightly overlapping, flat to slightly channelled, mixed colours yellow, salmon, orange, scarlet, crimson, magenta, rose and mauve. [14]

COLTNESS YELLOW RESELECTED. (Raised, introduced and sent by Messrs. Hurst & Son Ltd.) **H.C.** September 11, 1958. Plant 2½ to 3½ feet high, compact and erect, bearing flower stems 12 to 14 inches long. Flowers 3½ to 4½ inches diameter, single, fairly freely produced; florets long, broad, slightly pointed, reflexed, flat to slightly channelled, Primrose Yellow (H.C.C. 601). [2]

DWARF HYBRIDS RESELECTED. (Raised, introduced and sent by Messrs. Hurst & Son Ltd.) **H.C.** August 19, 1958. Plant 2½ to 3 feet high, compact and erect, bearing flower stems 10 to 12 inches long. Flowers 3½ to 4 inches diameter, semi-double, freely produced; florets medium length, broad, slightly pointed to blunt, overlapping, channelled, mixed colours including white, yellow, orange, scarlet, crimson, rose-pink and magenta. [22]

MONARCH MIXED. (Raised, introduced and sent by Messrs. Hurst & Son Ltd.) **H.C.** September 11, 1958. Plant 3 to 3½ feet high, spreading, bearing flower stems 12 to 14 inches long. Flowers 3½ to 4 inches diameter, semi-double, freely produced; florets long, medium width, pointed, reflexed, overlapping, channelled, mixed bright colours including white, yellow, pale apricot, orange, scarlet, cerise and magenta. [28]

UNWIN'S DWARF HYBRIDS. (Raised and introduced by Messrs. W. J. Unwin Ltd., Histon, Cambs., and sent by Messrs. D. T. Brown & Co. Ltd., Premier Seed Warehouse, Poulton-le-Fylde, Lancashire.) **H.C.** September 11, 1958. Plant 2½ to 3½ feet high, compact and erect, bearing flower stems 12 to 14 inches long. Flowers 3½ to 4½ inches diameter, semi-double, freely produced; florets long, broad, slightly pointed to blunt, overlapping,

channelled, mixed colours yellow, orange, bronze, scarlet, crimson, magenta, purple and rose. [21]

RADISHES UNDER DUTCH LIGHTS AND FRAMES

Fifty-six stocks of radishes were received in 1958 for trial at Wisley. The trial was sown thinly in drills ½ inch deep and 4 inches apart on March 5, 1958. One Dutch light and one continuous cold-frame was sown with seed of each stock to provide comparison. Full particulars regarding the Dutch lights and continuous cold-frames are to be found in the R.H.S. JOURNALS, **82**, p. 263, and **83**, pp. 128 and 129. The seedlings were thinned as necessary to provide sufficient space for full root development. No heating was used during the cultivation of the trials.

The trial was inspected by a sub-committee of the Fruit and Vegetable Committee on April 28, 1958, and on its recommendation the Council has made the following awards to radishes as varieties suitable for cultivation under Dutch lights and frames.

The descriptions in this report are taken from the plants grown under the continuous cold-frames. The number in brackets after the description of the stock is that under which it was grown in the trial.

COMET IMPROVED. (Raised and sent by Mr. F. N. Mead, P.O. M'Sonneddi, Southern Rhodesia.) **A.M.** April 28, 1958. Plant 3 inches high, vigorous, erect; foliage medium green; root 1$\frac{1}{10}$ inches diameter, $\frac{9}{10}$ inch long, flattened globular, 5 per cent above soil, red self. Fit for use on April 24. [22]

DEMASQUE. (Raised, introduced and sent by Messrs. Co-op Zaaizaad-vereniging, West Friesland, W.A. Wijdenes, Holland.) **A.M.** April 28, 1958. Plant 2½ to 3 inches high, vigorous, erect, compact; foliage medium green; root 1$\frac{1}{10}$ inches diameter, ⅛ inch long, flattened globular, 25 per cent above soil, red with small white tip. Fit for use on April 24. [25]

FRENCH BREAKFAST FORCING. (Raised, introduced and sent by Messrs. A. R. Zwaan & Son Ltd., Voorburg, Holland.) **A.M.** April 28, 1958. Plant 2½ to 3 inches high, vigorous, erect, compact; foliage medium to dark green; root ⅝ inch diameter, 1⅜ inches long, cylindrical, 45 per cent above soil, red with white tip. Fit for use on April 24. [39]

GAUDRY. (Raised, introduced and sent by Messrs. L. Clause, S.A., Bretigny-sur-Orge, France.) **A.M.** April 28, 1958. Plant 2 to 2½ inches high, fairly vigorous, erect; foliage medium green; root $\frac{7}{10}$ inch diameter, ⅛ inch long, globular, 15 per cent above soil, upper half purplish red, lower half white. Fit for use on April 23. [29]

HALF-LONG ROSE WHITE-TIPPED. (Raised, introduced and sent by Messrs. L. Daehnfeldt Ltd., 75 Vestergade, Odense, Denmark.) **A.M.** April 28, 1958. Plant 3 to 3½ inches high, vigorous, erect, compact; foliage medium to dark green; root $\frac{8}{10}$ inch diameter, 1$\frac{7}{10}$ inches long, cylindrical, 75 per cent above soil, purplish red with white tip. Fit for use on April 24. [50]

NEW RED. (Raised, introduced and sent by Messrs. A. R. Zwaan & Son Ltd.) **A.M.** April 28, 1958. Plant 3 inches high, vigorous, erect, compact; foliage medium green; root 1¼ inches diameter, 1 inch long, slightly flattened globular, 50 per cent above soil, dark red self. Fit for use on April 24. [12]

RED FORCING. (Sent by Messrs. Nunhem Seed Co., Haelen (Lb), Holland.) **A.M.** April 28, 1958. Plant 2¼ to 2½ inches high, vigorous, erect,

compact; foliage medium green; root $\frac{9}{10}$ inch diameter, $\frac{1}{2}$ inch long, flattened globular, 15 per cent above soil, red self. Fit for use on April 22. [4]

SAXA. (Raised, introduced and sent by Messrs. L. Daehnfeldt Ltd.) **A.M.** April 28, 1958. Plant $1\frac{3}{4}$ to 2 inches high, fairly vigorous, erect, compact; foliage medium green; root $1\frac{1}{10}$ inches diameter, $\frac{9}{10}$ inch long, flattened globular, 15 per cent above soil, red self. Fit for use on April 25. [10]

SAXA. (Raised, introduced and sent by Messrs. A. Hansen, Kastrup, Amager, Denmark.) **A.M.** April 28, 1958. Plant 3 to $3\frac{1}{2}$ inches high, vigorous, erect, fairly compact; foliage medium green; root 1 inch diameter, $\frac{1}{2}$ inch long, globular, 25 per cent above soil, red self. Fit for use on April 23. [8]

SAXA. (Raised and sent by Messrs. Co-op Zaaizaadvereniging, West Friesland.) **A.M.** April 28, 1958. Plant $2\frac{1}{2}$ inches high, vigorous, erect, compact; foliage medium green; root 1 inch diameter, $\frac{1}{2}$ inch long, flattened globular, 25 per cent above soil, red self. Fit for use on April 24. [17]

FRENCH BREAKFAST. (Raised, introduced and sent by Messrs. L. Daehnfeldt, Ltd.) **H.C.** April 28, 1958. Plant $4\frac{1}{2}$ inches high, fairly vigorous, erect; foliage medium to dark green; root $\frac{1}{2}$ inch diameter, $1\frac{7}{10}$ inches long, cylindrical, 75 per cent above soil, red with white tip. Fit for use on April 24. [35]

FRENCH BREAKFAST. (Raised, introduced and sent by Messrs. J. E. Ohlsens Enke, Linnesgade 14, Copenhagen, Denmark.) **H.C.** April 28, 1958. Plant 3 to $3\frac{1}{2}$ inches high, vigorous, erect, compact; foliage medium green; root $\frac{1}{2}$ inch diameter, 2 inches long, cylindrical, 75 per cent above soil, purplish red with white tip. Fit for use on April 24. [51]

FRENCH BREAKFAST. (Sent by Messrs. Vilmorin-Andrieux, S.A., 4 Quai de la Mégisserie, Paris, France.) **H.C.** April 28, 1958. Plant 3 inches high, vigorous, erect, compact; foliage medium to dark green; root $\frac{9}{10}$ inch diameter, 2 inches long, cylindrical, 60 per cent above soil, purplish red with small white tip. Fit for use on April 24. [33]

SAXA. (Raised, introduced and sent by Messrs. J. E. Ohlsens Enke.) **H.C.** April 28, 1958. Plant $2\frac{3}{4}$ to 3 inches high, vigorous, erect, compact; foliage medium green; root $1\frac{1}{10}$ inches diameter, $\frac{9}{10}$ inch long, flattened globular, 25 per cent above soil, red self. Fit for use on April 24. [14]

SAXA EXTRA SHORT TOP. (Sent by Messrs. J. L. Clucas Ltd., Ormskirk, Lancs.) **H.C.** April 28, 1958. Plant $2\frac{1}{2}$ inches high, fairly vigorous, erect, compact; foliage medium green; root 1 inch diameter, $\frac{9}{10}$ inch long, slightly flattened globular, 15 per cent above soil, red self. Fit for use on April 24. [15]

SAXA FORCING. (Sent by Messrs. D. T. Brown & Co. Ltd., Premier Seed Warehouse, Poulton-le-Fylde, Lancs.) **H.C.** April 28, 1958. Plant 2 to $2\frac{1}{2}$ inches high, fairly vigorous, erect, compact; foliage medium green; root 1 inch diameter, $\frac{9}{10}$ inch long, slightly flattened globular, 25 per cent above soil, red self. Fit for use on April 24. [16]

PLANTS TO WHICH AWARDS HAVE BEEN MADE IN 1958

Calluna vulgaris 'Peter Sparkes' A.M. September 30, 1958. This fine variety of heather is stated to be a sport from 'H. E. Beale' and is similar in growth but bears double flowers of a deeper shade of pink, between Rhodamine Pink (H.C.C. 527/3) and Fuchsine Pink (H.C.C. 627/2). Exhibited by Mr. J. W. Sparkes, Beechwood Nurseries, Beoley, Redditch, Worcs.

Cimicifuga simplex var. ramosa A.M. September 16, 1958. An excellent, late-flowering herbaceous plant with ternately divided leaves and sharply toothed leaflets, and racemes of white flowers, up to 2 feet long. The exhibitor states that the plant will reach 7 feet in a moist, well-cultivated soil. Exhibited by Messrs. Maurice Prichard & Sons Ltd., Riverslea Nurseries, Christchurch, Hants.

Lilium 'African Queen' A.M. July 1, 1958. A very beautiful hybrid lily, raised in America by MR. J. DE GRAAFF, and selected from the Aurelian hybrids. The cut spike exhibited had about sixteen large flowers on an erect stem, with well-spaced leaves, 6 inches long. The trumpet-shaped flowers are carried on 4-inch stems and measure up to 5 inches across the open flower. The three inner perianth segments are ovate-lanceolate, 6 inches × 1½ inches and Chinese Yellow (H.C.C. 606) in colour, with a brown line along the centre of the reverse surface. The outer segments are lanceolate 6 inches × 1 inch, Chinese Yellow (H.C.C. 606) on the inner surface, the outer surface being shades of Garnet Brown (H.C.C. 0098) suffused Chinese Yellow. Introduced and exhibited by Mr. J. de Graaff, The Oregon Bulb Farms, Gresham, Oregon, U.S.A. (Fig. 13).

Lilium 'Destiny' A.M. June 17, 1958. This handsome lily, a cross between *L. amabile luteum* and *L.* 'Valencia', was raised in America. The stout stems, 3 feet 6 inches high on the specimen exhibited, bear alternately arranged, linear-lanceolate leaves and carry erect flowers of Aureolin Yellow (H.C.C. 3) 5 inches across, with reflexed lobes, spotted brown. Raised by MR. J. DE GRAAFF, The Oregon Bulb Farms, Gresham, Oregon, U.S.A. Exhibited by P. M. Synge, Esq., Clare Cottage, West Byfleet, Surrey.

Lilium 'Limelight' A.M. July 1, 1958. Another of MR. J. DE GRAAFF's hybrids, this lily was also selected from the Aurelian hybrids. The spike exhibited was similar to *L.* 'African Queen' in growth with more open flowers, 6 inches across, of Aureolin (H.C.C. 3/1 to 3) tinged green towards the base. Exhibited by The Oregon Bulb Farms, Gresham, Oregon, U.S.A. (Fig. 13.)

Lilium 'Pagoda' A.M. July 1, 1958. A fine hybrid lily raised by MR. J. DE GRAAFF, of the Oregon Bulb Farms, U.S.A. The 3-foot stem exhibited, bore dark green, linear-lanceolate leaves about 6 inches long,

and about sixteen rather flat flowers, 6 inches across when open, with somewhat recurved petals of Saturn Red (H.C.C. 13/1) spotted brown inside. Exhibited by The Crown Estate Commissioners, The Great Park, Windsor, Berks.

Lilium 'Parade' A.M. July 1, 1958. Another of MR. J. DE GRAAFF'S hybrids, this lily is similar in growth to *L.* 'Pagoda', but with leaves paler green and with more upright flowers of Cadmium Orange (H.C.C. 8/1–8), spotted brown inside. Exhibited by The Crown Estate Commissioners, The Great Park, Windsor, Berks.

Magnolia × thompsoniana A.M. June 17, 1958. This hybrid between *M. tripetala* and *M. virginiana* is a vigorous deciduous shrub with many characters of *M. virginiana*, but with larger, elliptic to oblong leaves, 6–10 inches long, glaucous beneath and pale green above. The fragrant, creamy white flowers are up to 7 inches across but less globular in shape than those of *M. virginiana*. Exhibited by G. S. Thomas, Esq., Briar Cottage, West End, Woking.

Paeonia suffruticosa 'Sybil Stern' A.M. May 19, 1958. This magnificent tree paeony was raised by SIR FREDERICK STERN, O.B.E., M.C., F.L.S., V.M.H., from seed of open pollination. The leaves are bipinnate, the lateral leaflets ovate, with the terminal leaflet deeply three-lobed. The Cherry Red (H.C.C. 722) flowers have a central boss of Lemon Yellow stamens and from twelve to fourteen obovate petals. When fully open the flowers measure up to 7 inches across. Exhibited by Sir Frederick Stern, O.B.E., M.C., F.L.S., V.M.H., Highdown, Littlehampton Road, Goring-by-Sea, Worthing, Sussex. (Fig. 142, November JOURNAL, 1958.)

Pelargonium (violaceum × ovale var. ovatum) 'Splendide' A.M. June 17, 1958. An extremely effective flowering plant for the cool greenhouse which received a Preliminary Commendation in 1953. This pelargonium which has ovate, greyish leaves, with serrulate margins, carries its striking flowers on stems 2½ inches long. The flowers 1¼ inches across have upper petals coloured Indian Lake (H.C.C. 826/3), the lower petals being white, and the stamens dark purple. Exhibited by Lord Astor of Hever, Hever Castle, Edenbridge, Kent.

Phyllothamnus erectus A.M. May 19, 1958. This hybrid between *Phyllodoce empetriformis* and *Rhodothamnus chamaecistus* is a handsome evergreen shrub up to 1 foot high, with alternate, linear, dark green leaves, slightly recurved at the margins, about ½ inch long and $\frac{1}{10}$ inch wide. The flowers are shallowly cup-shaped, about ½ inch in diameter and Fuchsia Purple (H.C.C. 28/2 paling to 28/3) in colour, and borne singly on glandular stems at the apex of the twigs. Exhibited by Major and Mrs. G. W. Knox-Finlay, Keillour Castle, Methven, Perthshire.

Ranunculus aconitifolius flore pleno A.M. May 19, 1958. This neat and dainty plant has been known in gardens for nearly four hundred years, as "Fair Maids of France". It is a hardy herbaceous plant, which grows to a height of 2 feet, with palmately lobed, deeply toothed leaves. The fully double, pure white flowers are about ¾ inch

in diameter, and are borne in graceful sprays. Exhibited by The Sunningdale Nurseries Ltd., Windlesham, Surrey.

Rodgersia aesculifolia A.M. July 1, 1958. An extremely handsome, herbaceous perennial, native to China, with digitately compound, basal leaves up to 16 inches across, and usually seven leaflets up to 10 inches long, coarsely toothed and narrowed to the base. The plant may reach a height of from 2½ to 6 feet depending on the conditions, growing best in a moist peaty soil. The numerous, small, white flowers are carried in large panicles up to 2 feet long in June and July. Exhibited by L. Maurice Mason, Esq., Talbot Manor, Fincham, King's Lynn, Norfolk.

Rosa californica plena A.M. June 17, 1958. This rose, introduced into cultivation in 1878, is a native of the U.S.A. from Oregon to California. The graceful habit, with arching branchlets show the semi-double flowers, 3 inches across, of Fuchsine Pink (H.C.C. 627) with a central boss of golden yellow stamens, very effectively. Exhibited by The Director, John Innes Horticultural Institution, Bayfordbury, Herts., and Mrs. L. Fleischmann, Malcolm House, Batsford, Moreton-in-Marsh, Glos.

Rosa × macrantha 'Daisy Hill' A.M. July 1, 1958. This rose, a semi-double form of a chance hybrid between *R. gallica* and *R. canina* which arose in France in the eighteenth century, bears Rose Pink flowers (H.C.C. 427/2 paling to 427/3) up to 3 inches across, beautifully scented with nine or ten petals to each flower. An ideal ground-cover plant because of its vigorous, trailing habit. Exhibited by The Director, The John Innes Horticultural Institution, Bayfordbury, Herts.

Rose 'Westminster' A.M. September 16, 1958. A fragrant Hybrid Tea variety resulting from a cross between 'Gay Crusader' and 'Peace'. Its large full flowers are of good form. The colour is Cherry (H.C.C. 722/1) deepening towards the edges of the petals to Cherry (H.C.C. 722) and the ground colour of the reverse is Amber Yellow (H.C.C. 505), which also shows at the base of the petals. Raised and exhibited by Mr. Herbert Robinson, M.B.E., Victoria Nurseries, Burbage, Hinckley, Leicestershire.

Rose 'Gold Marie' A.M. September 30, 1958. A very attractive free-flowering and strong-growing floribunda variety bearing large well-spaced clusters of semi-double medium-sized light Chrome Yellow (H.C.C. 605) flowers with an occasional small tinge of red on the reverse of some of the outer petals. It is claimed to be highly resistant to disease. Raised in Germany by Herr Wm. Kordes, introduced and shown by Messrs. Wheatcroft Bros. Ltd., Ruddington, Nottingham.

Rubus 'Tridel' A.M. May 19, 1958. This beautiful shrub is a hybrid raised by CAPT. COLLINGWOOD INGRAM, F.L.S., V.M.H., from a cross between *R. deliciosus* and *R. trilobus*. The glistening white flowers are up to 3 inches in diameter, with a central boss of pale yellow stamens, and are borne singly in the leaf axils throughout the length of the stem. In the size, shape and colour of its foliage it resembles closely its pollen

parent *R. deliciosus*, but the flowers are larger and borne in greater profusion. Exhibited by Capt. Collingwood Ingram, F.L.S., V.M.H., The Grange, Benenden, Kent.

Smithiantha cinnabarina A.M. September 30, 1958. This plant, attractive both in flower and foliage, received the award as a plant for the warm greenhouse. It has been included in several genera at different times, including *Gesneria*, *Naegelia* and *Isoloma*. The broadly ovate, cordate leaves are dentate and were up to 7 inches across on the specimen shown. Both stem and leaves are covered with soft, red-purple hairs. The flowering spikes carry numerous pendulous, tubular flowers about 1½ inches long, lobed at the mouth and coloured Nasturtium Red (H.C.C. 14 to 14/1). Exhibited by The Director, The University Botanic Gardens, Cambridge.

Syringa 'Clarke's Giant' A.M. May 19, 1958. This splendid lilac, raised in America, has flowers of Cobalt Violet (H.C.C. 634/1) overlaid with Wisteria Blue (H.C.C. 640/1). They are borne in heavy tight panicles about 10 inches long by 7 inches wide, and the individual florets are 1 inch in diameter. Exhibited by Messrs. R. C. Notcutt Ltd., The Nursery, Woodbridge, Suffolk.

Syringa 'Kim' A.M. June 3, 1958. This lilac, one of the Prestoniae group (*villosa* × *reflexa*), has dark-green, oblong-lanceolate leaves up to 6 inches long and narrowly tubular flowers of Mallow Purple (H.C.C. 630/2), borne in large freely branched panicles up to 10 inches long. Exhibited by L. Maurice Mason, Esq., Talbot Manor, Fincham, King's Lynn, Norfolk.

Syringa 'Monique Lemoine' A.M. June 3, 1958. This excellent lilac has fully double, glistening, white flowers borne in heavy panicles, 9 inches long and 8 inches in diameter on the specimens shown. The individual florets are up to 1 inch across and the flowers are delicately scented. Exhibited by Messrs. R. C. Notcutt Ltd., Woodbridge, Suffolk.

ORCHIDS

Brassolaeliocattleya (Golberra g.) 'Lyoth Fireball' A.M. September 16, 1958. This is a brightly coloured hybrid which originated as a cross between *Brassolaeliocattleya* 'Goldenthea' and *Laeliocattleya* 'Canberra'. The petals were 6 inches across and coloured Lemon Yellow (H.C.C. 4) with the lips tinged a light shade of reddish-brown. In sharp contrast, the deeply frilled lip was coloured an undefined ruby-red colour suffused at the base with pale orange colouring. There was some pleasant scent to the plant. Exhibited by Messrs. Charlesworth & Co. Ltd., Haywards Heath, Sussex.

Cynorchis uncinata A.M. September 16, 1958. It is of interest that the actual plant shown was collected, by the exhibitor, in Madagascar. The large leaves were 12 inches long and 4 inches across and the umbellate head of flowers was made up of ten open blooms and eight buds, arising from the axils of leafy bracts. Both the petals and large

lip were coloured Mineral Violet (H.C.C. 635/2). Three clefts divided the lip into lobes and in the centre of it was a prominent white disk. Exhibited by L. Maurice Mason, Esq., Talbot Manor, Fincham, King's Lynn.

Dendrobium (Caesar g.) 'Hin' A.M. July 15, 1958. The spike exhibited of this magnificent orchid bore twenty-six blooms, each 2¾ inches across and 3 inches deep. The three outer tepals are lanceolate and somewhat recurved, the inner lateral tepals are spatulate, 2 inches long and 1 inch wide. The labellum is almost tubular, with a fringe of yellowish hairs in the throat, and the lower part is protracted into a short, saccate spur. The colour of the flower is creamy white, with the slightest tinge of purple at the base of the inner tepals. *Dendrobium phalaenopsis schroderianum* is one of the parents of this hybrid, *D. stratiotes* the other. Exhibited by Mr. Lim Theng Hin, c/o "Subha Villa", 18 Pinhorn Road, Penang, Malaya.

Odontioda (Marcet g.) 'Lyoth Regal' A.M. July 15, 1958. This cultivar was obtained by crossing *O.* 'Margia' with *O.* 'Cetura'. The spike of flowers on the plant exhibited was some 18 inches long and bore twelve flowers. Each flower is 3½ inches wide and deep. The tepals flattish with undulating and fimbriated margins, and in colour a deep velvety crimson, marbled with a lighter shade. The labellum is bright yellow, with a white crest. Exhibited by H. Wichmann, Esq., Bahnhofstrasse 34, Celle, W. Germany.

BOOK NOTES

"Gardening for Display." By J. R. B. Evison. 200 pp. Illus. (Collingridge.) 35s.

It would be hard to suggest anyone more experienced and more competent than Mr. J. R. B. Evison to write a book on "Gardening for Display". Mr. Evison is Superintendent of the County Borough of Brighton Parks and Gardens, where he is responsible for all the wonderful displays of bedding plants which annually surprise and delight the hundreds of thousands of visitors to Brighton.

Mr. Evison has written this book in an easy, understanding manner, most of the information contained in it has been gathered from his own practical experience, the result being the best book on this subject to date.

The book is written in two parts. Part One gives full accounts of routine management of flower beds, propagation and arrangement of bedding plants, which include hardy annuals, half-hardy annuals, subtropical varieties and also a wide range of bulbs, together with colour schemes and tabulated varieties for grouping.

I liked very much the chapter on Pests and Diseases, and also the diagnoses and prescriptions of troubles, followed by notes on insecticides. This chapter contains practically everything detrimental which is likely to happen to plants. It is written in such a concise way that nothing seems to be omitted. It is most cleverly laid out in four columns; Plants, Symptoms, Pests and Diseases, and Protective Measures.

Part II contains an encyclopaedia of nearly 200 genera of bedding plants, arranged in alphabetical order, giving history, propagation, cultivation and the best species of genera for bedding purposes. This is followed by an Appendix and Lists of plants for special purposes.

The black and white photographs are well chosen and I much appreciated the sixteen line drawings showing most clearly the necessary identification points.

This book will, I feel sure, become an authoritative textbook for all Park Superintendents and those training for such posts, also for amateur lovers of gardening for

display in both the small and large gardens. In it they will find the answer to most, if not all, their troubles, and a much needed guide in the arrangements of their spring and summer bedding, and the making beautiful of their garden generally.

The price, 35*s*., must be considered reasonable for such a mine of information.

FRANCIS HANGER

"Hydrangeas and Viburnums." By Douglas Bartrum. 159 pp. Illus. (John Gifford Ltd.) 18*s*.

If "Hydrangeas and Viburnums", by Douglas Bartrum, brings these attractive plants to the notice of still more gardeners, it will have been well worth while: for I doubt whether a flowering shrub border can really outshine a herbaceous border from April to September without their use. Indeed, the hydrangeas are quite as important in the late summer garden as rhododendrons and azaleas in spring or roses at midsummer. But much depends upon the choice of varieties, for so many sorts that can be made to flower if cramped in a pot never flower effectively outdoors.

Mr. Bartrum describes some of the best hortensias for outdoor growing and, in many cases, our respective choices coincide, but I have discarded a number of his varieties as insufficiently free-flowering.

It is gratifying to see the term Lacecap now in general use for the flat-headed hydrangeas. Of these, I warmly endorse Mr. Bartrum's praise of the charming 'Lanarth White', 'Bluewave' and 'Grayswood'. Mr. Bartrum states that there are no fragrant hydrangeas in cultivation, but the fertile flowers of the Lacecap have a strong "Meadowsweet" scent, so much so that travelling in a vanful of them is quite overpowering! Hydrangeas 'Beauté Vendômoise', 'Lanarth White', *serrata intermedia*, *paniculata* var. *praecox* and var. *floribunda*, said to be unobtainable, are all available from nurseries. I, for one, consider both these *paniculata* varieties superior to *grandiflora* as garden shrubs.

So long as the plants are raised outdoors in the open ground, the lovely blue variety 'Vibraye' flourishes outdoors almost all over the industrial midland areas, except, of course, in frost holes. I find that protecting the plants in winter with bracken, etc., as recommended in this book, causes more damage from fungus than frost would have done. On the other hand, igloos of polythene, supported on crossed hazel hoops, ensure free flowering even in cool gardens.

The viburnums are nicely dealt with. The wide variation in quality of different forms of *V. fragrans* and the remarkable effectiveness of *V. bodnantense* might well have been mentioned. The supremely beautiful *V. tomentosum* is most rightly praised, but *V. tomentosum sterile*, and not *V. tomentosum plicatum*, is the correct name for the Japanese Snowball, and it is a pity that the valuable late-flowering variety 'Rowallane' is omitted. But these are minor points in a charming and useful little book, beautifully illustrated in both colour and monochrome.

MICHAEL HAWORTH-BOOTH

"1959 Amateur Gardening Diary." Compiled by A. G. L. Hellyer. Cr. 8vo. 160 pp. (Collingridge.) 7*s*. 2*d*.

This little volume should be useful to all gardeners as it contains directories of nurserymen and suppliers of horticultural sundries arranged according to categories, details of principal horticultural societies, growers' associations, botanic gardens, research stations and agricultural advisory officers, as well as a lengthy list of recommended books. The notes in the main diary portion are by Mr. J. S. Dakers and are practical and concise, each being illustrated with an attractive line drawing of a flower in season.

ERRATUM

R.H.S. JOURNAL, Vol. 83, November 1958, p. 492—"Orchids of Peru". $4.50 post paid is the cost of Part I only and not of the full set as stated in the review.

ORDERS FOR BOOKS

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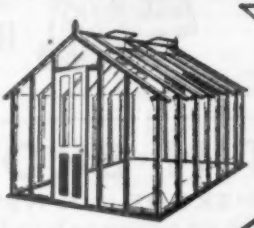

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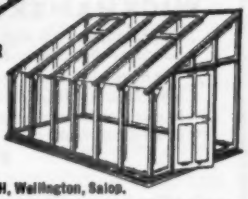

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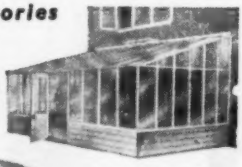

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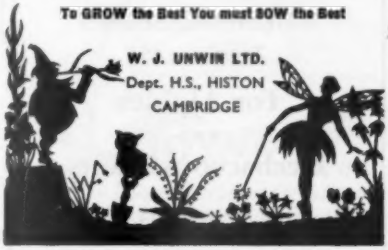

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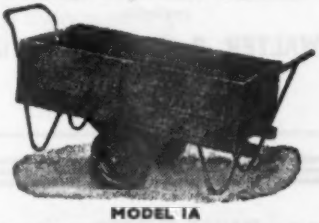

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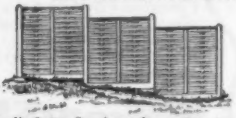

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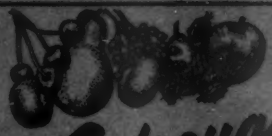

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